HOW TO BUILD POULTRY HOUSES

PUBLISHED BY
AMERICAN POULTRY JOURNAL
CHICAGO, ILLINOIS

HOW TO BUILD POULTRY HOUSES

PLANS AND SPECIFICATIONS FOR PRACTICAL POULTRY BUILDINGS, ACCOMPANIED BY A DESCRIPTIVE TEXT ON THE CONSTRUCTION OF POULTRY HOUSES AND THE PRINCIPLES OF POULTRY HOUSE ARCHITECTURE

BY LEADING AUTHORITIES
EDITED BY
FRANK L. PLATT

PUBLISHED BY
AMERICAN POULTRY JOURNAL
CHICAGO, ILLINOIS

PREFACE

Some twenty years ago American Poultry Journal published a book with the title of "How to Build Poultry Houses." The book had a large sale over a series of years and a number of successive editions were printed.

Since the material for that book was prepared and put in type, great changes have been made in styles of poultry houses. There has been a steady advance in the knowledge of how to successfully house fowls for their greatest comfort and maximum production.

The state agricultural colleges and agricultural experiment stations have done an immense amount of investigational work along the lines of housing. They have sought to design buildings that would be equal to the fullest requirements, taking into consideration the climate of their respective geographical sections of the country.

Climate should always indicate in no small measure the type of poultry building erected in any region. This is true because the fundamentals of poultry house construction are fresh air, sunshine, dryness.

Dryness in the house, freedom from frost on the walls and dampness in the litter, depends largely on adequate ventilation which brings in out door air and carries out air that has been breathed by the fowls and thus become laden with moisture from their respiratory systems. Where mechanical ventilators are not employed, ventilation is dependent upon wire covered or musline covered space in the wall of the house. How much open space, as well as how much glass, is necessarily governed by climate and geographical location.

The state colleges have carried their work to the point where a standardized type of house may be recommended and used with success, not only in the particular state but in other districts of the same latitude.

It is not longer necessary to take the house plan of a single poultryman who has worked out a successful house for his special location and then endeavor to adapt it to another location. The state institutions have worked out the housing problem on broad, general lines that will meet a wide range of individual conditions.

In publishing a new book under the title of "How to Build Poultry Houses," we are pleased to present the plans for houses designed and recommended by several of the leading state colleges. While bulletins on poultry house construction may be secured from the station or college of the state in which a man is resident, it is something new to combine within the covers of a single book the best plans of several of the leading poultry states. Those who plan to erect poultry buildings with a view to their permanency, who, in other words, plan to make a real man's business of poultry culture, will do well to pattern the houses herein described and illustrated. We believe that this book will meet a long felt want as an authoritative work on poultry house construction, and we want to acknowledge the courtesy of the poultry husbandry departments of the state colleges which have made its publication possible.

FRANK L. PLATT

Wisconsin Poultry Houses

Designed by the University of Wisconsin, Agricultural Experiment Station.
By J. G. Halpin and C. A. Ocock

One of the most essential things in poultry keeping is to have a suitable house which will protect the fowls from inclement weather and from their natural enemies. It is not the purpose of this bulletin to show each one exactly how to build a poultry house, but some of the elementary principles of poultry house construction are discussed and a few working plans are given, which it is hoped can be modified to suit different conditions on different farms. It is well understood that no two farms will present exactly the same conditions. For instance, one farmer will desire to keep one hundred hens while another may want many more or less. Then again some farms will present one kind of soil, whereas on other farms the character of the soil and drainage are entirely different. Some farmers will desire a house which presents an attractive appearance, whereas on other farms poultry houses will be so located that they are not conspicuous, and hence the matter of appearance is of little concern.

It must be remembered that from the standpoint of the hen, appearance makes very little difference, but the house must be so built and so arranged that it will be a comfortable place for the hens to live; otherwise they will not thrive and production will not be satisfactory. On many farms the hens are not provided with a house constructed especially for them but are housed in an old building originally made for some other purpose. As a rule this sort of a house is not economical, for unless it is constructed especially for hens, it will seldom be found possible to reconstruct it in such a way as to make economical production possible.

Poultry house site. Poultry houses should be located where it is dry and well drained. If the ground is not naturally dry, it should be ditched and drained artificially, for poultry will not thrive in a house when the floor is constantly wet. A damp location means a damp poultry house all the way through and the result is that the fowls are affected with many troublesome diseases. Damp ground that is likely to remain muddy around the house is not satisfactory because the hens' feet become soiled and, as a consequence, the eggs and nests become dirty, and dirty eggs are unattractive on the market. If cleaned, a large amount of labor is necessary and with the best of care, cleaned eggs never look so well as eggs that have never been soiled. When hens run at large on wet ground, the litter on the floor of the house soon becomes dirty and wet, thus making a

very unsatisfactory place for feeding. The ground out-of-doors is also unsatisfactory for feeding as wet ground soon becomes filthy and the filth sticks to the feed, making it impossible for the hens to pick it up without consuming more or less filth. Ground which is naturally wet is cold in the spring. It is also slower to become aerated and holds filth on the surface much longer than dry ground.

Houses should be placed so that they will not be subject to violent winds; yet, good air and drainage are essential. A house should never be placed in a low, damp spot where early fall frosts are likely to occur. These places are always cold and unhealthy for fowls.

Build the house on ground that slopes to the south if possible. If this can not be done, always face the house toward the south so as to get the sun's rays throughout the day in winter to keep it bright inside. Where it is necessary to build a house in a windy place, trees can often be planted to break the wind. Small shrubs

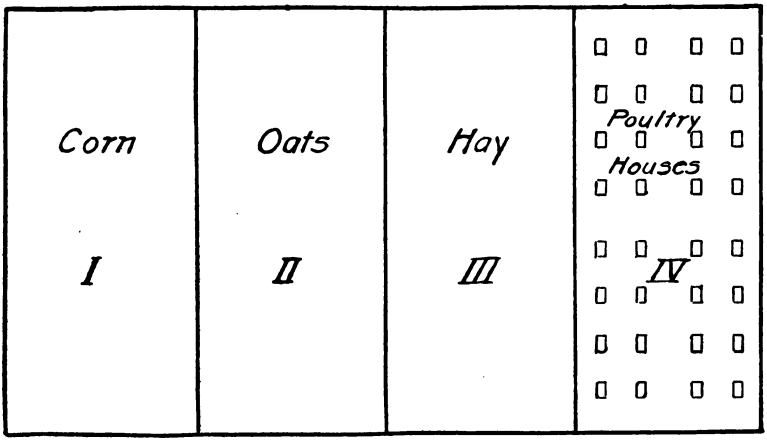


Fig. 1.—A system of rotation is possible with portable colony houses. The houses can be moved each year to a different field.

are also a great help and can be planted in such a way that they afford shelter to the house during the fall and spring when the winds are violent. Hens enjoy lying in the sun, especially during the windy days after the leaves fall from the trees. The orchard can often be chosen as the site for the hen house and the hens allowed to run under the trees throughout the year.

Poultry houses should be convenient to other buildings, and yet, not so close that the hens constantly infest the other buildings. If the poultry house is too close to the barns, the hens are likely to get into the habit of roosting in the barn, cow stable, tool shed, etc.

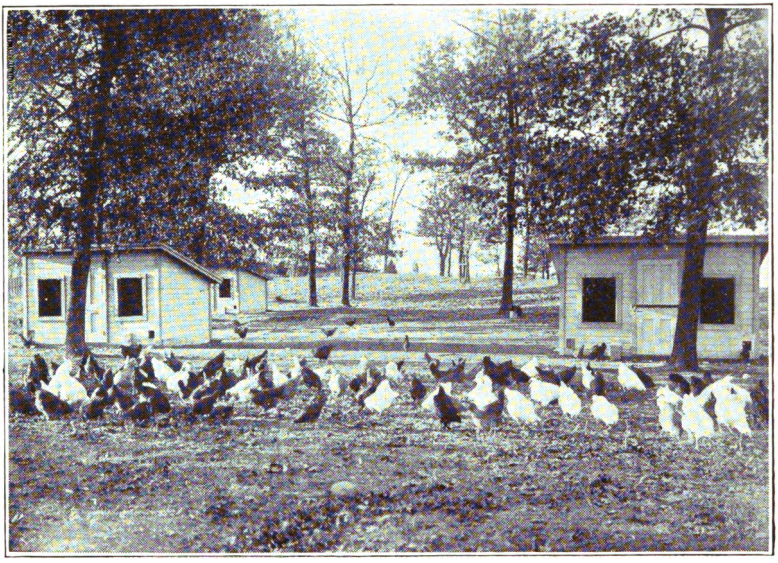


Fig. 2.—Portable Colony Houses and Flocks on the Range.

Colony house system. The colony house system consists of having one flock or one colony in one building. Colony houses are of two types, the portable and non-portable. The portable type of colony house has many advantages, especially for growing young stock. The usual method is to nail them on runners and then have a team draw them from place to place as desired. This type of house saves much feed which has been wasted in the fields. You may draw the house into the grain field after the crop has been harvested, and then, after the oats are cut, the house and chickens can be moved into the oat field, etc. In this way, stock is always kept on clean ground and gets more insects than would be possible when kept around the farm buildings. In some years, especially when grasshoppers are abundant, poultry out in the field will pick their living and at the same time rid the farm of troublesome insects.

With this system of housing there is, of course, much more danger from thieves. In some localities, it would be found necessary to protect the windows and doors with iron bars while in other localities stock would be perfectly safe. A good watch dog can often be used. On some of the larger farms, where poultry is kept quite extensively, it is found possible to keep the chickens in portable colony houses throughout their lives. The young stock is started while the houses are near the farm buildings so that they can be

protected from their enemies and cared for without a great deal of trouble. As they get older they can be moved farther from the buildings out into the field. Toward fall the houses are drawn in near the farm buildings and placed close together so that they can be cared for readily throughout the winter.

A small house of the non-portable type is most frequently used on the general farm. Its principal disadvantage appears in fall when with the chickens all in one colony, it is necessary to put the hens

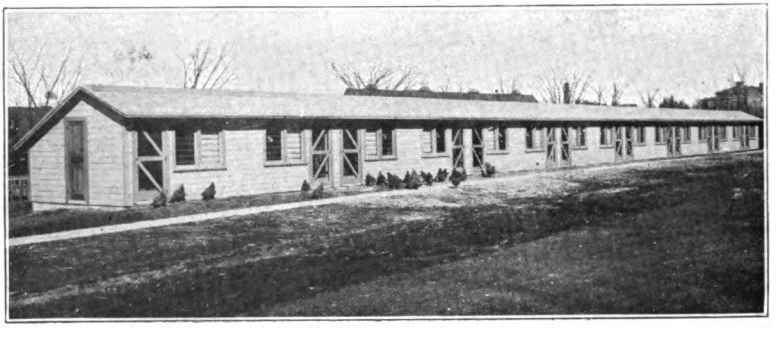


Fig. 3.—Long Poultry House at Wisconsin College of Agriculture.

and pullets together, with the result that the hens, being accustomed to the house, abuse the pullets when they first come in from the range. With this type of house, there is no chance to select the best laying and most vigorous females. This plan makes it necessary to keep enough males to fertilize the eggs of the entire flock. Market eggs are not as good quality when fertilized for fertilized eggs often start to grow before they reach the consumer.

The long house system. Long houses, with or without cross partitions, are used on many large poultry farms. This type has the advantage of being less expensive to build, and they require less labor to care for the fowls as the attendant goes from one pen to another more quickly than he can go from one detached house to another. Long houses have the ground more closely stocked and there is much less natural feed such as insects, green grass, etc. As large numbers are kept closely together, the tendency to disease is greater. The grounds and buildings need more careful watching to keep them sanitary. Much fertilizer is wasted as the ground next to the house cannot be utilized to advantage for growing crops. Where large numbers are kept together, the tendency to form bad habits, such as egg eating, etc., is much more pronounced. The long house with partitions across it is usually to be preferred to the long house without partitions. With several partitions in a house one can

divide the hens to advantage and treat them much more as colonies of chickens are treated.

With this type of house one can resort to several methods of yarding. A good method is shown in Fig. 4. In this diagram each pen has an individual yard on the south where the stock is allowed to run in fall and early spring. The north side is left as an open field in which the hens run during summer after the breeding season, and, being accustomed to their pens, the majority of them return to their own places without trouble. While they are occupying the north yard, the south yard is cultivated and sown to a crop of buckwheat and rye to sweeten the ground and furnish fall and spring pasture. This sowing should be done on most farms late in June or early in July. The space immediately north of the house is more likely to become contaminated. It is, therefore, desirable to grow a crop of some kind on this each year. Corn or sunflowers are grown on many farms as the corn is planted early and attains considerable size before the hens are turned on. The result is that the hens secure shade in the corn field and get an abundance of green stuff from the alfalfa or clover at the back of the yard. This yard at the back may be mowed and a good crop of hay secured. Just what can be accomplished, of course, depends to a great extent upon the character of the soil found in the yard. The principal thing is to keep it constantly cultivated so as to get rid of filth as much as possible.

The continuous house without partitions should be yarded on both north and south. This type of house, of course, is less expensive, as there are no inside fences in the yard. The principal disadvantage of this system is that the hens crowd to the end of the house at feeding time unless hopper feeding is used almost exclusively. Expert care is needed to keep such a large number of hens from acquiring bad habits. An expert can care for a large flock, but an amateur might better care for fewer hens and give them more individual attention.

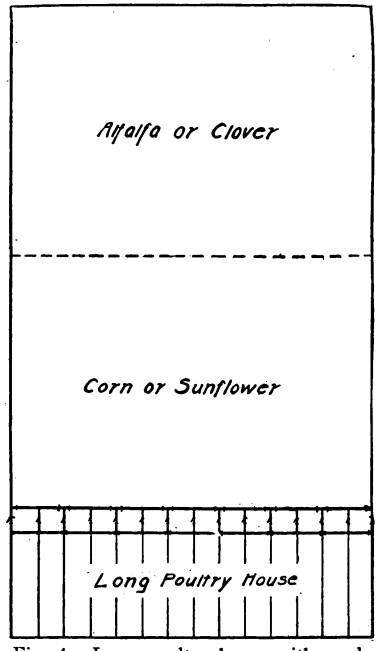


Fig. 4.—Long poultry house with yards in front and open field behind.

General farmers, who keep only a few chickens, as well as large poultry plant owners can use the small portable houses for growing chicks. They are especially good for pullets which develop much better on free range than under closely confined conditions. A system of portable houses is used in many parts of the country where poultry is kept extensively. With a portable house system, there is no excuse for the ground becoming contaminated. The houses are moved from one field to another before the ground becomes filthy and the fertilizer is saved for growing crops. From the standpoint of fertility, this is by far the most economical system. The general farm which keeps only a few chickens should have either two small houses, one for pullets and the other for hens in the fall, or else one house with a division in it. In this way it is possible to make up the breeding pens from the best hens and pullets in the spring, and then later to allow all to run together, if advisable. In either case it is far better to fence in the hens that are not kept for breeding purposes giving the breeding flock free range of the farm. No matter what system is used, it is always best to encourage the hens to range near their house and away from the other farm buildings. To do this, keep the house clean. It often pays to store some feed there so that the hens expect to be fed from the house and not from the barn.

A common mistake is that of feeding the fowls from the back porch, in this way teaching them to come to the house where they are pests. All the kitchen scraps that are to be utilized for poultry feed should be placed in a pail, carried to the poultry house and fed in a clean place or in clean troughs near the house. Another common mistake is confining the hens in a small yard, when frequently a little more fence could be used around the garden and house and the hens kept where desired, yet allowed abundant range. At times a rather closely woven field fence, could be erected around the orchard and thus give the hens abundant range without much additional expense. A low fence will confine hens when allowed a good sized range whereas a high fence is necessary where the range is small.

Poultry houses usually have one of two great faults. They are constructed either with an all glass front or with practically no glass. The house which contains a glass front becomes extremely hot during the day in winter and extremely cold at night; whereas a house with little or no glass is damp and dreary, and the hens almost never thrive in such a place. A poultry house must be light so that the hens can readily see to eat and so constructed that it is comfortable. In order to make the hens comfortable it must be free from drafts, dampness, bad odors, or foul air, and constructed so as to be as free as possible from sudden changes of temperature.

A poultry house usually needs more ventilation than is given. Fresh air is far more important than warmth. Fresh air means health

but must never be supplied by a draft. The hen was never intended to live in a house. A tree is her natural home; but the northern winters are so cold that it is impossible to get eggs from hens roosting in trees, as it takes all they can eat to keep them alive. The poultry house, then, should furnish protection from storms and cold winds, and always provide a clean, dry feeding floor and a clean, dry roosting place. If a house is damp in winter it is usually because there is not enough ventilation, and more air must be admitted in some form to carry out the dampness and bad air. The best system of ventilation for the ordinary poultry house is a cloth covered window which will allow air to pass slowly back and forth through it. This cloth window will need to be open a large part of the time, only closed during storms and the very coldest nights. In most locations a cloth window should be placed on the south side and hinged in such a way that it is readily opened. Where a house has a south side largely of glass, a part of the glass should be removed and cloth covered frames inserted. In houses with little glass, openings should be cut in the same way as would be done for a glass window, and a cloth covered frame inserted in the opening. As a general rule, a poultry house should have about one square foot of glass to fourteen or sixteen square feet of floor space, and about one square foot of cloth to eight or ten of floor space. The amount of cloth necessary will depend to a large extent on the operator; that is, if the attendant is careful to keep the cloth window open during all mild days, less cloth will be necessary. As a rule poultry houses are too low to permit of the King system of ventilation. Where a poultry house is located away from other buildings so that the wind does not blow over a building and down onto the house, the King system of ventilation may be installed, but where the house is located near the barn or on a side hill, this system will not be satisfactory unless the ventilator tubes are built well up in the air above the house.

The size of the house. In determining the size of a house, consider the number of fowls that are to be kept in one pen. As a rule, fowls are too crowded for economical production. A flock of fifty hens should usually be allowed about five square feet of floor space per hen. Where the attendant is careful to keep the house clean and the floor heavily littered with straw, less floor space will be necessary. As a rule, it is far better to allow too much floor space rather than too little. The larger the pen, the less floor space will be required per hen. This is shown in Fig. 5. One hundred hens will thrive in a pen 20x20 feet; that is, four square feet of floor space per hen, but one hen will not thrive in a pen 2x2 feet. In the large pen, each one has a chance to wander about over the entire floor space, thus getting more exercise. As the number in the flock becomes less, the amount of floor space per hen must increase, and anyone keeping eight or ten hens should allow at least ten square feet of floor space

per hen, unless he is prepared to give special attention to cleaning and bedding the house. A crowded condition in a poultry house is responsible on many farms for lack of winter egg production.

Farm hens are frequently kept at the rate of about one square foot of floor space per hen. Where hens have access to the barnyard, straw stack, feed lots, etc., the amount of floor space per hen is not so important as the house then becomes a roosting place and the barnyard is the feeding floor. Many mistakes are made when increasing the number of fowls on farms. When hens become numerous the barn yard is no longer available as an exercising place for them, with the result that the hens are too closely kept. When 80 hens are kept in a house which is sufficiently large for forty, the results are discouraging. It is always best to sell part of the hens rather than to try to keep more than the house will accommodate satisfactorily.

The width of the house. As a general rule, it is far cheaper to build a wide house than a narrow one. A house 20x20 is cheaper than a house 10x40 and contains as much floor space for the hens. A house twenty feet wide, however, will be found impracticable for some types of roofs and will not be found satisfactory where one wishes to keep a number of small breeding pens. There are several common types of roofs used on poultry houses as shown in Fig. 6. Just which style of roof should be chosen is largely a matter of personal preference, but the type of roof will be found to influence the cost of construction to quite an extent.

Types of roofs—shed roof. A shed roof or "one slant," as it is sometimes called, shown in Fig. 6—1, is probably the most commonly seen and has the advantage of requiring less cutting of rafters as one rafter should reach clear across from plat to plate. It also turns all the water to the north, leaving the south or front dry and warm. It can be used advantageously on narrow houses, but cannot be used to so good advantage on buildings over fourteen feet wide. This roof is especially unsuitable on wide houses in places subject to heavy falls of snow. If it becomes necessary to build a shed roof wider than fourteen feet, heavy material should be used for rafters or else supporting beams should be run lengthwise throughout the

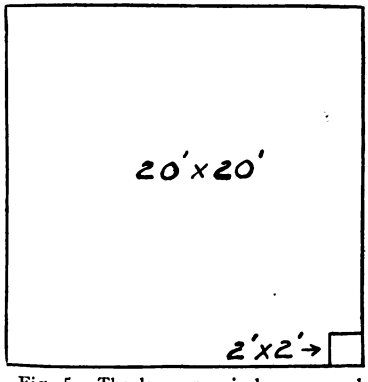


Fig. 5.—The large pen is large enough for 100 hens, but one hen could not thrive in a pen 2x2 feet.

house. On the wide houses this roof does not give a good appearance and should, therefore, be avoided if it is desired to construct a wide house in a conspicuous place. As a rule the roof on a poultry house is built rather flat, not over one-fourth pitch. A shed roof also has the advantage of giving a low rear elevation which makes the house warm, but has a disadvantage in some locations as the high front catches strong south winds, and also heats up rapidly during sunny days in winter. Most of the prepared roofings last longer on a north slope, and, therefore, are particularly adapted to the shed roof type.

Combination roof. The combination roof shown in Fig. 6—2 is merely a modification of the shed roof but is more attractive, giving the same low elevation in the rear and a lower elevation in front. This house can be built wider and is especially valuable in houses more than fourteen feet wide. Built with the same pitch of roof and with the same elevation in the rear this house contains less air space and is, therefore, warmer than the shed roof type. It requires twice as much cutting of rafters as in the shed roof type. In constructing this type of roof it is usually better to build the gable back one-third

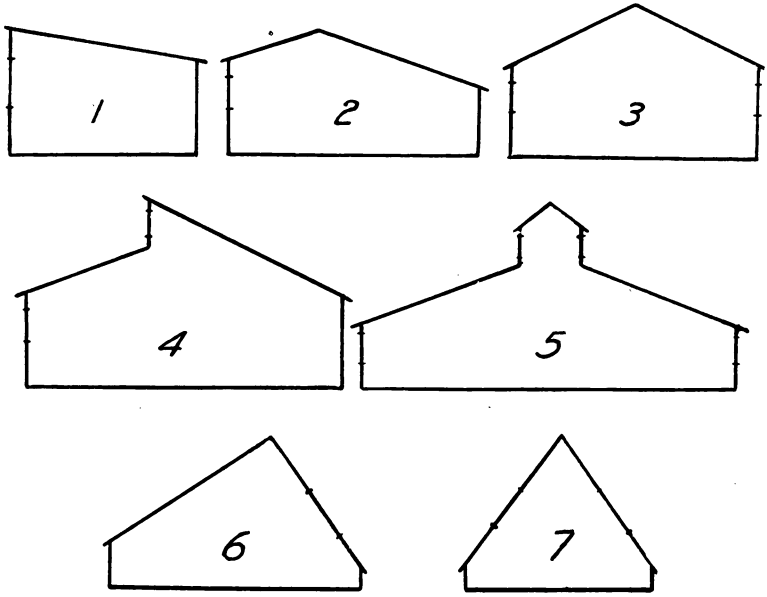


Fig. 6.—Different types of roofs used in poultry houses are here shown. 1 is a shed roof; 2 a combination roof; 3 a gable roof; 4 a semi-monitor roof; 5 a monitor roof; 6 a slanting front roof; and 7 and A type roof.

of the way from the front. That is, in a house eighteen feed wide the gable should be six feet back from the front. This is a type of roof which should be used more extensively than it now is.

Gable Roof. The gable roof shown in Fig. 6—3 is a common type and is very often used because it matches the other buildings on the farm. This type of roof permits of the house being built in any desired width, but gives more air space and makes the poultry house cold. That is, too high a rear elevation is needed to get the front high enough to admit sunshine and to allow for a door. The air space of such a house may be decreased by putting a ceiling from plate to plate, placing the boards so that about one inch space is left between each board. Then cover this with about one foot of straw so that the air can readily circulate from the pen up through the straw. To make this complete, cut a small door or window in each gable end and then have these windows open except during the severest storms. This will be found the most satisfactory method of remodeling many of the old gable roof houses.

Semi-monitor roof. This type of roof shown in Figure 6—4 is often used and is practical. Many of the old narrow shed roof houses are remodeled by building an addition on the south side forming a roof of this type. This type of roof is utilized to better advantage in a small stationary house than in a long house. It is unsuitable for a continuous house as the south side is built so low that it is practically impossible to clean out the litter without carrying it to the end of the building. It is possible in this type of roof to reduce the air space and secure sunshine in the very back of the pen, and makes a very practical small poultry house. Many times the south side needs only to be covered with wire, and in mild localities it is to be recommended for the open front type. The south side being low, storms do not readily enter, but this type will not be found suitable in windy localities.

Monitor type. The Monitor roof shown in Fig. 6—5 is excellent for warm climates. It is not, however, satisfactory in cold climates as the house contains too large an air space and is too expensive to build.

Slanting front type. The slanting front type shown in Fig. 6—6 is found on some of the old poultry houses but has not proven satisfactory.

As a general rule for the farm, it is better to use one of the first four types discussed, and just which type one uses should depend to quite an extent upon individual taste, but the style of the roof and the width of the house should always be determined upon before starting to build.

"A" type. The "A" type of roof shown in Fig. 6—7 may be used advantageously on the small colony house and in the large poultry

house where an alleyway is desired in the center with pens on either side. In the small colony house the windows are placed in the ends; in the long continuous house the windows would be built in the roof and care must be taken to make them rain proof. To guard against breakage, a wide screen should be placed over them on the inside. They should be so made as to be readily opened during the day but require considerable attention as they need to be closed before each rain.

Types of foundations. Portable colony houses should be built on two runners, either of 4x4 material or better, two small trees of some durable wood which may be flattened on top and tapered off at both ends so as to make a satisfactory runner. Usually it is better to treat these runners with some wood preservative before building the house, and then, so far as possible, keep them off of the ground by standing them on blocks or stones. Some use 2x4 pieces spiked together, and as fast as the lower one becomes soft, it is removed and a new one spiked fast. A stationary house may be placed on four foot posts set in the ground at intervals or better still, a three foot cement wall built as a foundation under the house. Some houses are made by laying the sills on the ground and replacing them whenever they rot out. This is the cheapest, as a good sill will last for several years and can be readily replaced. This method is often used on commercial farms. It is not, however, to be recommended as the sill is not usually replaced until the building has become dilapidated and much lumber injured, costing in the end more than a durable foundation.

Where rats are at all troublesome a substantial cement foundation is a good investment. This should always be brought from six inches to a foot above the surface and then filled in with coarse material, such as gravel, etc. In extremely wet locations, especially in clay soil, it often pays to excavate under the entire house and replace with stones or other coarse material, and then connect with tile drains to remove all the water from under the house. In many localities where stones are abundant, poultry houses are placed on stone walls, but unless cement is used to fasten the stones together securely, rats will often work under the house and do a great deal of damage. A loose stone wall soon becomes an ideal dwellnig place for rats and should, on that account, never be placed under poultry houses.

Kinds of floors. In many localities a sand or dirt floor is cheap and advisable. Hens like a dirt floor if it is dry. It makes a natural dust wallow but must be replaced frequently in order to keep the house sanitary. A dirt floor must always be well above the outside surface so that the water drains away leaving the floor dry and comfortable for the fowls. Where a cement foundation is used for the house, one can frequently tamp the surface hard and then fill

in to the top of the foundation with sand. This sand should be replaced each year before cold weather.

A cement floor is much easier to keep clean and is durable and rat proof. A cement floor should never be left bare but should be kept constantly covered with at least three inches of sand and with from six to ten inches of straw in winter. When sand cannot be had, extra care should be taken to keep the floor heavily littered so that none of it becomes bare.

In case a cement floor is used, it should always be built so as to be just even with the top of the foundation so that the entire surface is smooth and easily cleaned. Where a cement floor and foundation are placed in a house, it is usually better to put in the floor before constructing the house. The method that has been found most satisfactory is to dig a trench for the foundation, erect the forms to the desired height and fill with concrete. As soon as the foundation is at all hard, remove the forms from the side and immediately fill with cinders if available. Tamp hard and then immediately lay the cement floor as shown in Fig. 7. By building the cement floor while the foundation is green, the floor and the foundation become well fastened together, making it absolutely rat proof. A cement floor in a poultry house should be reasonably smooth so as to make cleaning easy.

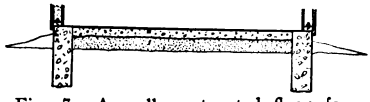


Fig. 7.—A well-constructed floor for a poultry house is shown above.

Walls of the poultry house. Walls of poultry houses must keep out rain, snow and cold winds. They should also give strength and rigidity to the house, and must be made in such a way that they can be readily disinfected and cleaned. They must also be reasonably durable and not too expensive. To fulfill the first requirement the walls on the north, east and west are usually made wind tight. Cement blocks have been used in some localities and are giving good service. Solid cement walls should never be used in the poultry house as they become damp and frost covered and can never be said to be satisfactory. Sometimes drain tiles are used in ordinary cement walls making air spaces which help keep out dampness. This method, however, is not used very extensively.

Metal covered walls are becoming more common and give fair service. They must be kept constantly painted in order to be durable. Most poultry houses are built with wooden walls. It is usual to use 2x4's about two feet apart for studding and either matched lumber or rough lumber with roofing paper or battens to make the wall windproof. Matched lumber, such as drop siding, is usually placed on horizontally and is used quite extensively as a house presents a good appearance and can be built rapidly. Where siding of this kind is used it should always be painted before being placed on the

house, care being taken to have the tongues, grooves, and edges carefully painted. The boards should be placed on the house before the paint becomes too dry. Matched siding of any kind should be dry, well driven together and well nailed so as to be wind proof. Care should be taken that all matched lumber used in this way is of good grade and free from loose knots or other such defects. To add warmth, tar building paper or one-ply roofing paper are often placed between the siding and studding, thus insuring a windproof wall.

Many old poultry houses are built with rough boards running up and down and the cracks covered with battens. As a rule, this method of construction is not satisfactory as the battens become loose leaving cracks which are very undesirable. Rough boarding, either perpendicular or horizontal, is also being used quite extensively. When using roofing paper to cover rough boards it is advisable to cement the joints thoroughly and then batten with thin strips, at least every two feet, and then paint the entire outer surface with two coats of good paint. Other walls are constructed by nailing rough boarding to the outside of the studding, covering with tar building paper, and then with ordinary siding such as is usually used on houses. Just which form of wall is best to use will depend very largely upon the locality. With any of these or with their modifications, which are many, a tight wall can be constructed so that which is advisable depends to a large extent upon the necessity of presenting a good appearance or the necessity of keeping the construction at a low figure. Where the boarding runs up and down, less studding are used and in this way this type of construction becomes advantageous. In the poultry house, however, this requires more cutting and more labor to build. Where the boarding runs horizontally it is hard to construct a wall which will always be wind proof.

Selecting roofing materials. A great many of the newer poultry houses are covered with prepared roofing materials and are proving very satisfactory. Many are constructed with such flat roofs that shingles are not desirable. Roofing paper is cheaper and, especially on a flat roof, is found to be more advisable. Where the roof is somewhat steep and shingles of good quality can be purchased they will be found to be more durable. When prepared roofings are used, it is always best to use a good grade of boards for the roof. About the most satisfactory method in Wisconsin is to use hemlock shiplap. The shiplapping makes a smooth tight surface and one on which prepared roofing can be laid easily. It will be found that roofing materials last much longer on a smooth surface of this kind and will pay in durability for the extra cost. Some of the older houses were roofed with rough boards and battens. This type of roof is not satisfactory.

Materials for partitions. Wherever there is only one poultry house a partition is always advisable as it permits one to keep the hens separated from the pullets early in the winter and makes it possible later to make up a breeding pen of the best fowls. In a small house, that is one not over thirty feet long, one should use boards for the partitions for about two feet from the floor. The rest may be made of wire or cloth except between the roosts of the different pens where the boards should run to the roof. (See Fig. 8.) A solid partition at the back prevents draft on the fowls when roosting and a solid partition at the bottom prevents fighting.

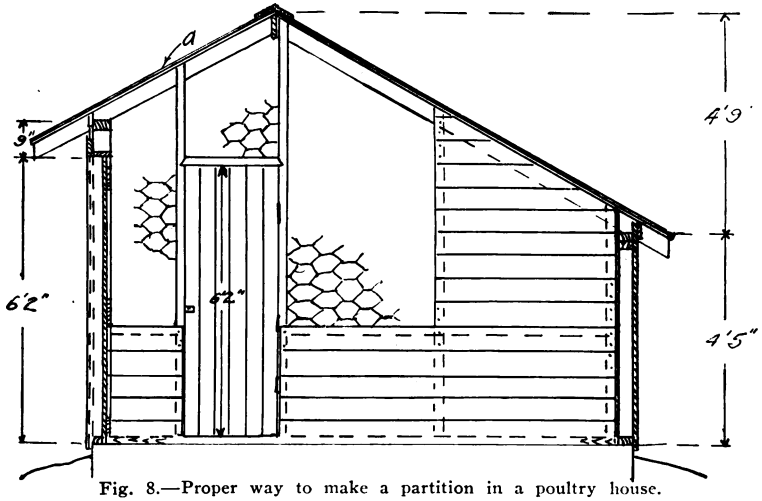


Fig. 8.—Proper way to make a partition in a poultry house.

In extremely long houses it is desirable to put in solid partitions, either for each pen or at intervals of about forty feet, according to the size of the pen and the location of the building. In a windy location solid partitions will be found necessary more frequently in order to cut down the draft. Where cloth is used as a part of the partitioning, it will be found necessary to change it frequently. In most places wire will usually be found most advantageous. Long houses should have doors in each partition arranged in a straight line and hung with double acting hinges. In a long poultry house, say a house over one hundred feet long, it is usually desirable to put in a trolley system so as to lessen the labor of caring for the fowls.

Ceiling for warmth. In either a shed roof, semi-monitor, or combination roof, it is usually not desirable to ceil the roof except over the roosts, see Fig. 9. In gable roof houses it is frequently desirable to ceil clear across as noted on page 13. For ceiling around the

roosting closets it is usually best to use matched lumber with tar building paper between the lumber and the studding and the rafters. It is also advisable to leave the space open between the upper edge of the last ceiling board and the roof boards. This will allow one to spray into this space when disinfecting the house.

Arranging interior fixtures. The interior arrangement should be planned to make it easy to clean the house and care for the fowls.

Perches. The perches should be all on the same level in the warmest part of the pen away from drafts, and should be readily removable. If the perches are not all on the same level the fowls will fight for the opportunity to roost on the highest and the chances are that many fowls will be injured by falling off the perch. The perches should be in the warmest part of the pen as they need the most protection from the cold during the night when the fowls are inactive. At this time the house is also usually colder than during the day. The perches should be easily removable to facilitate cleaning, disinfecting, and fighting mites. They should be so constructed that a disinfectant can be readily applied to all parts. They should

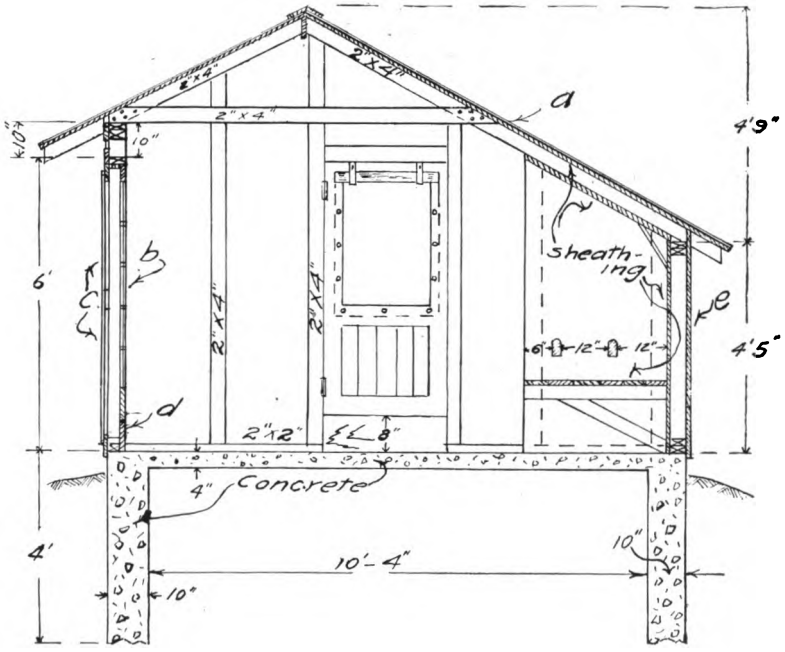


Fig. 9.—Cross section of well constructed poultry house.

be as simple as possible and made in such a way as to have the smallest number of cracks and crevices which offer hiding places for mites and other vermin.

As a general rule small hens should have about six inches of perch space while the larger hens should be allowed eight inches. In the winter they huddle closer together, but in the summer there should be plenty of room to allow them to spread out. Perches should be twelve inches apart and not closer than fifteen inches to the wall or ceiling. Show birds, especially Leghorns, or similar types should be kept at a greater distance from walls and ceilings. Many good birds are spoiled by "brooming" their tails against the walls.

There are several methods of making movable perches. One of the most common is by hinging them to the wall at the back. If these hinges are made with loose pins the entire set of perches can be readily removed. The perch itself should not be fastened to the supporting crosspiece which should be notched so that the perch sets into it as shown in Fig. 10.

Dropping boards. Where the hens are fed inside the house, as is usual in winter in many places, it is advantageous to place boards under the perches to catch the manure, thus keeping the floor clean so that it, as well as the rest of the house, can be utilized as a feeding floor. When no dropping boards are used a wide board should be placed in front of the perches on the floor so as to keep the litter away from the droppings under the roost. The use of dropping boards is economical, for it increases the size of the feeding floor. These boards, being close to the fowls, necessitate frequent cleaning, hence more labor, but if the manure is properly handled, enough fertilizer is saved to pay for the extra labor, and frequent cleaning means healthy fowls. On the general farm, dropping boards may be placed in the house in the fall and winter and kept cleaned. When the other farm work becomes pressing in the spring, and the hens are allowed to run at large, they no longer need be fed in the poultry house, so the dropping boards may be removed. Where this system is used it becomes very necessary that the dropping boards be removed in the Spring and not left to accumulate a large amount of droppings which would be close to the fowls and very unhealthy. A hinged roost and dropping board is shown

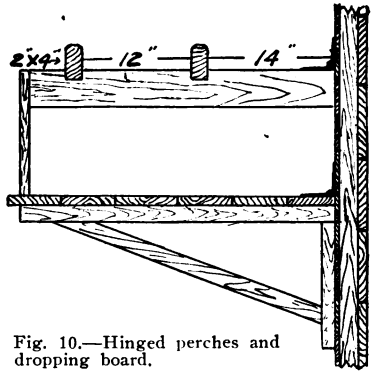


Fig. 10.—Hinged perches and dropping board.

in Fig. 10. This is a very good arrangement for the droppings are cleaned each morning and then the perches and dropping board swing up and out of the way, thus giving the hens a clear open space. This method is used in the long poultry house at the University of Wisconsin. Before this system was tried there was a great deal of trouble with hens laying under the dropping board instead of in the nests. After installing this system the trouble was greatly lessened.

Nests. Every poultry house should be well supplied with nests which are easily accessible and readily removed for cleaning and disinfecting. There are many methods of arranging nests, each method having some particular advantage over all others. The nests may in some instances be placed under the front edge of the dropping board as in D Fig. 11 and so arranged that the hens enter from the rear and the attendant gathers the eggs by opening a door or doors on the front side. This is an inexpensive arrangement, as the dropping board forms a cover for the nests. These nests are dark, which is a decided advantage, as hens like to hide, and there is less danger of their learning to eat eggs. It has the decided disadvantage of making the floor under the dropping boards of little use in feeding. It darkens the floor and hens are much more likely to lay in the straw on the floor than in the nests, with the result that many times eggs are left for several days before being gathered. The careful poultryman who furnishes guaranteed eggs will not sell those which have been laid on the floor. In buildings which have a high rear elevation, some of this trouble may be obviated by elevating the roosts and dropping board. This can be done,

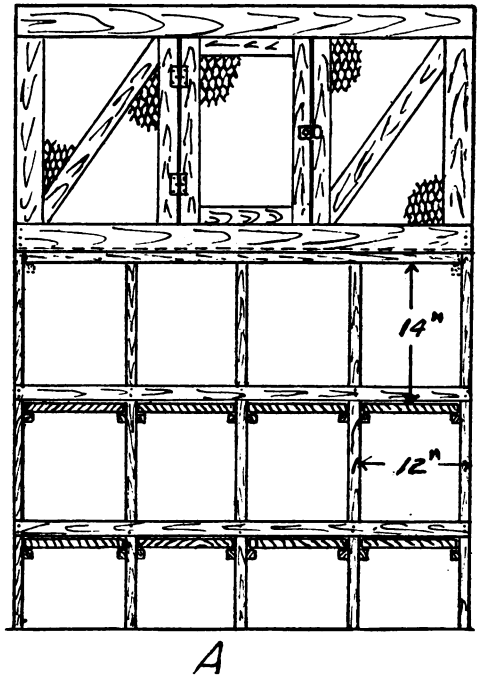
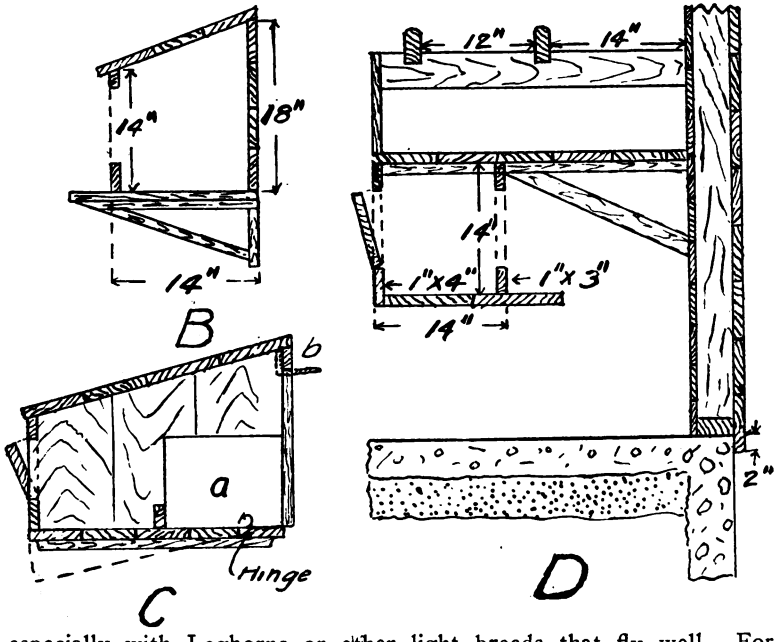


Fig. 11.—Different types of nests. A is a tier of nests with broody coop on top. B and C are types of wall nests. D is a nest under the dropping board.



especially with Leghorns or other light breeds that fly well. For the heavier breeds, it will be found necessary to put in a slanting board with cleats to enable the hens to walk to such a height. It will always be found necessary to keep the floor extremely well bedded. Many heavy hens will jump down from the dropping board instead of walking down the inclined perch and if the litter is thin, they may injure their feet.

Another and quite common arrangement is to fasten small open boxes to the walls of the poultry house. These boxes can be fastened with two 6d nails and easily removed for cleaning. Where this system is used, if the boxes should accidentally become badly infested with mites the entire box being of little value, can be burned and new boxes put in. This method does not allow trap-nesting, and the nests are not dark, yet it is used very extensively by poultrymen.

Where hens are confined and allowed to lay in open nests of this type, the eggs should be gathered at least twice each day. This is an extremely good practice and should be followed, especially on farms where a good quality of table eggs is being produced.

There are several good types of wall nests, some of which are darkened and others that are not. Figure 11 shows two different types which may be used successfully.

A nest for a Leghorn or other small hen should be 12 inches square; for the larger varieties, 14 inches square. The nest should give at least 12 inches head room and be about 14 inches high. They should be kept clean and well bedded with fine nesting material, such as straw or hay. Shavings, excelsior, etc., are not satisfactory as a rule, for they may stain the eggs. Coarse straw and other harsh substances do not make satisfactory nesting material. A hen likes a pliable, soft substance in the nest.

Watering devices. A convenient place should be provided for water. It is best to construct a small stand about 1 foot above the floor and place the water dish on this. This stand can be constructed in the partition so that the hens in two pens drink from one dish. It is, however, usually better to give each pen a separate drinking dish. The water stand should be placed where it is light, and convenient to empty the dish and re-fill it. As a rule the water dish will keep cleaner if near the south side of the building, as the hens scratch the litter toward the north much more than toward the front of the house. A hen faces the light usually when digging in the straw for her feed and the result is that the litter works back.

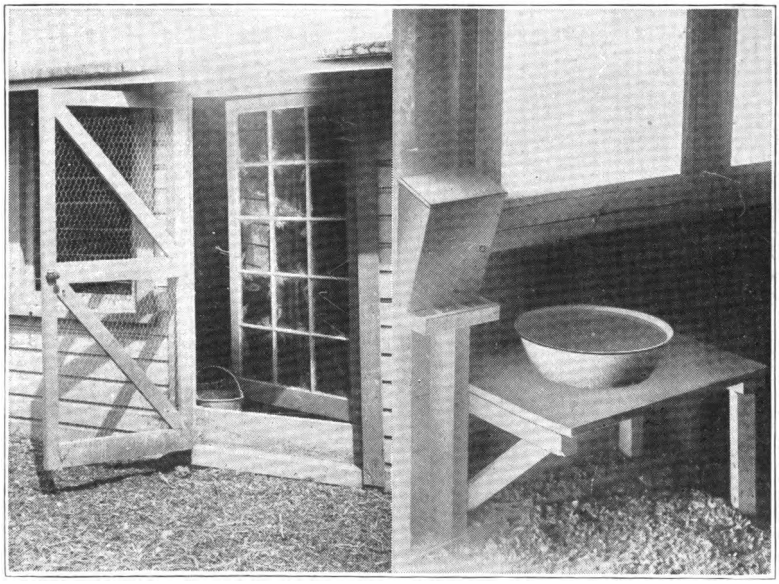


Fig. 12.—Double doors are needed when it is desired to have a screen door. The inside door should be of glass and shorter than the other so it will swing over the litter.
Fig. 13.—A stand like the above with water pan insures clean water for the fowls.

There are numerous drinking devices on the market, many of which are valuable. A large number of farmers, however, use either a small pail or pan. A low pail makes a very convenient water dish as the bale enables it to be readily handled with one hand. A pan as shown in Fig. 13 also makes a convenient watering dish. Care should be taken not to use watering devices of any kind which have parts that connot be readily cleaned. A dirty drinking dish is frequently a source of disease and should never be permitted in any poultry house.

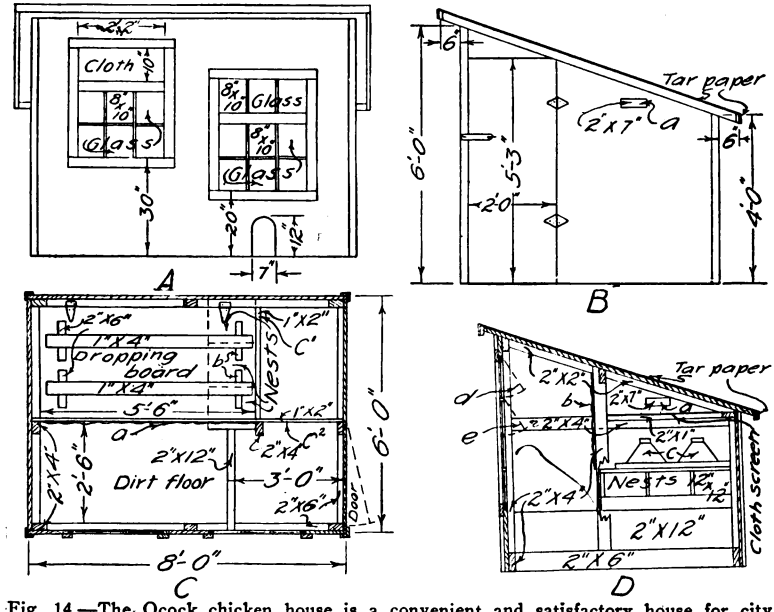


Fig. 14.—The Ocock chicken house is a convenient and satisfactory house for city lots. It will accommodate 15 individuals if good care is given the flock. A dirt floor is shown at the left in C. At the right in C is a board floor on which the straw litter is placed in winter months. A piece of 2x12 inch material is used as a partition, to prevent the straw from getting over on to the dirt, and is shown in D. The perches, c, on the dropping board are movable to make cleaning easier. The dropping board is hinged and should be swung up as high as the cloth screen during the day, especially during the winter and early spring. The nests are open under the dropping board and have small doors on the side next to the flooring for removing the eggs. The nests are so constructed as to be removed any time for cleaning. A cloth screen extends the full length over the dropping boards, roosts, and floored portion. The frame work being shown at c^1, c^2, in C. A drop curtain of canvas is in front to be used on cold nights; this is shown at a in C and at b in D. An opening is made in each end of the house above the screen and is shown at a in B, also at a in D. A cloth screen is hinged above the window in A and is shown open at d in D. The small three-light glass sash above the six-light sash is also hinged and is shown open at e in D. The roof, side wall and ends are covered with tar paper inside in the half which is devoted to the roosts, nests and part of the floored space. The boarding of this house is nailed up and down.

Dust bath. Fowls need a chance to wallow in the dirt in order to free their bodies of scales and lice. Without this, their bodies become covered with broken down scales which, together with lice, cause intense itching. In the winter a dust bath usually has to be provided inside of the poultry house and should be near an open window so that the sun shines on it during a part of the day. For this purpose a common box filled with fine sand to which has been added a little insect powder is quite effective. Sifted coal ashes and road dust, etc., also make effective dust baths. In a house which has a good dry sand floor, or in a cement floored house where the floor is covered with three or four inches of fine sand, a dust bath is seldom needed as the hens will wallow in the sand on the floor.

Bill of material for the Ocock house. Nail all boards up and down instead of around. Hemlock may be used instead of pine if kept well painted.

Siding, Roofing, Nests, Dropping Board and Floor:
270 board feet of 8 inch ship-lap, No. 2 pine.
Corner Boards, Window Casings and Dropping Board Frame:
6 pieces of 1x3 inch, 16 feet long, No. 2 pine.

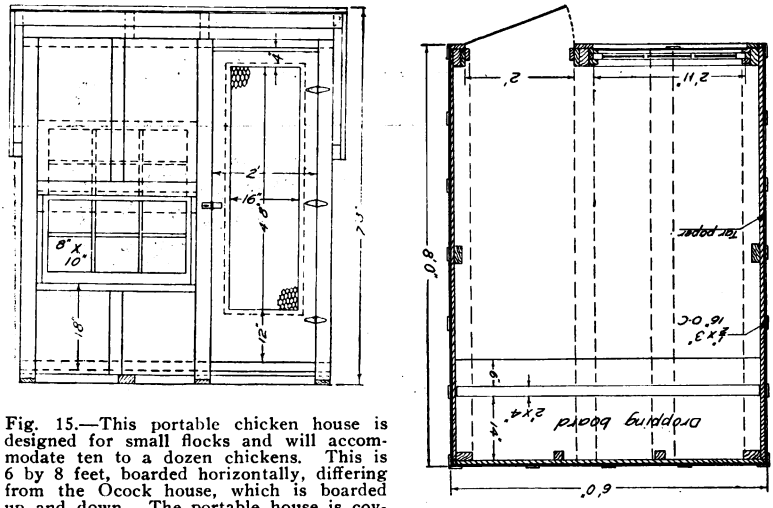


Fig. 15.—This portable chicken house is designed for small flocks and will accommodate ten to a dozen chickens. This is 6 by 8 feet, boarded horizontally, differing from the Ocock house, which is boarded up and down. The portable house is covered on the exterior with tar paper, which is put on up and down, all joints being cemented. Over each joint and also between, nail a ½x3 inch strip to prevent the paper from working in the wind. The door has a screen wire covering for day time and a hinged cloth screen to cover the wire at night. The roost is movable and is placed 14 inches from the ceiling. Four skids of 4x6 inch material running lengthwise of the building on which the floor rests, make a ready means to move the house from one place to another.

Partition:

1 piece of 2x12 inch, 6 feet long plank, No. 3 pine.

Cornice Fascia and Cloth Frame:

2 pieces 1x2 inch, 10 feet long, No. 2 pine, and
2 pieces 1x2 inch, 16 feet long, No. 2 pine.

Rafters, Studding and Girts:

1 piece 2x2 inch, 14 feet long, No. 2 pine.
2 pieces 2x4 inch, 10 feet long, No. 2 pine.
4 pieces 2x4 inch, 12 feet long, No. 2 pine.
2 pieces 2x4 inch, 16 feet long, No. 2 pine.
2 pieces 2x6 inch, 14 feet long, No. 2 pine.

Miscellaneous.

One 12-light plain rail window, glass 8x10 inches..
One 3-light barn sash, glass 8x10 inches.
One double roll, 216 square feet, 2 ply roofing paper.
Four yards muslin for screens.
Three yards heavy duck for drop curtain in front of roosts.
One pair 4 inch strap hinges for door.
One hasp and staples.
One pair T hinges, 6 inch, for dropping board.

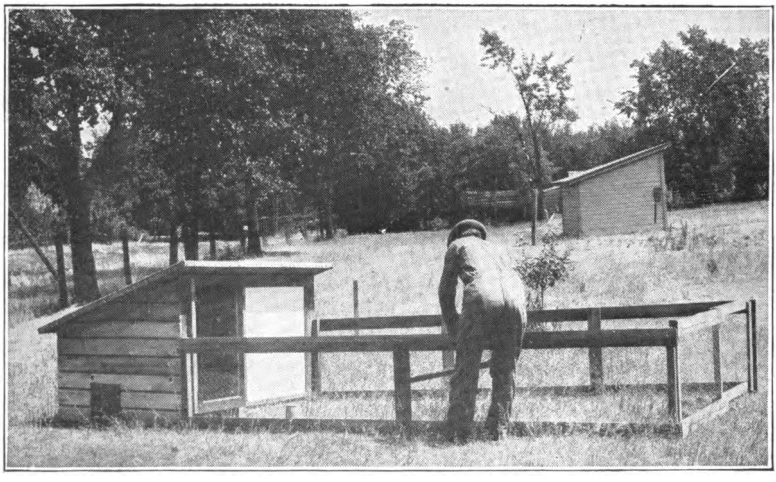


Fig. 16.—Outdoor brooder and small run.

Bill of material for the portable house. Nail siding horizontally instead of up and down. Hemlock may be used instead of pine if kept well painted.

Roof, Sides and Dropping Board:

250 board feet of 8 inch ship-lap, No. 2 pine.

Floor:

54 board feet of 6 inch matched fencing, No. 2 pine.

Cornice Fascia, Dropping Board Frame and Window Casings:
4 pieces 1x3 inch, 16 feet long, No. 2 pine.

Rafters, Studding, Skids and Girts:

7 pieces 2x4 inch, 12 feet long, No. 2 pine.
4 pieces 2x4 inch, 10 feet long, No. 2 pine.
2 pieces 2x4 inch, 16 feet long, No. 2 pine.
11 pieces ½x3 inch, 12 feet long, No. 2 pine.

Miscellaneous.

One 6-light sash, glass 8x10 inches.
One double roll 2 ply tar paper, 216 square feet.
Eight square feet poultry netting, 1 inch mesh.
Three strap hinges 4 inches long.
One hasp and staples.

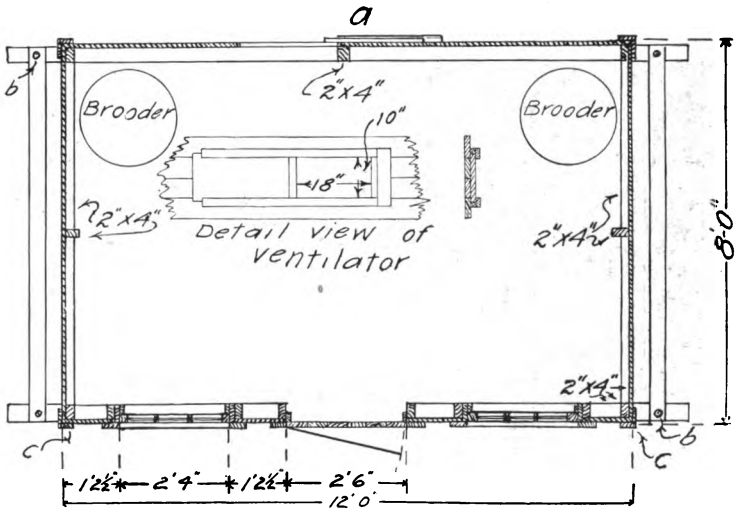
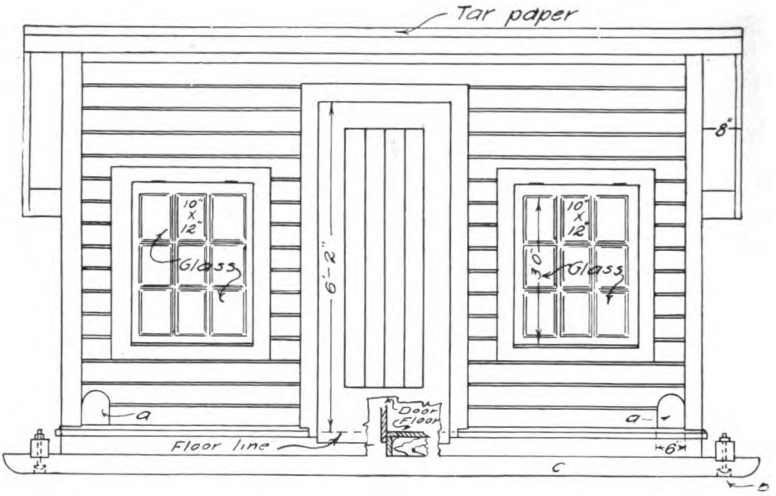


Fig. 17.—Brooding house used at Wisconsin College of Agriculture. Note the details of ventilator. Location of ventilator is shown at a. Cross section is shown in Fig. 18.



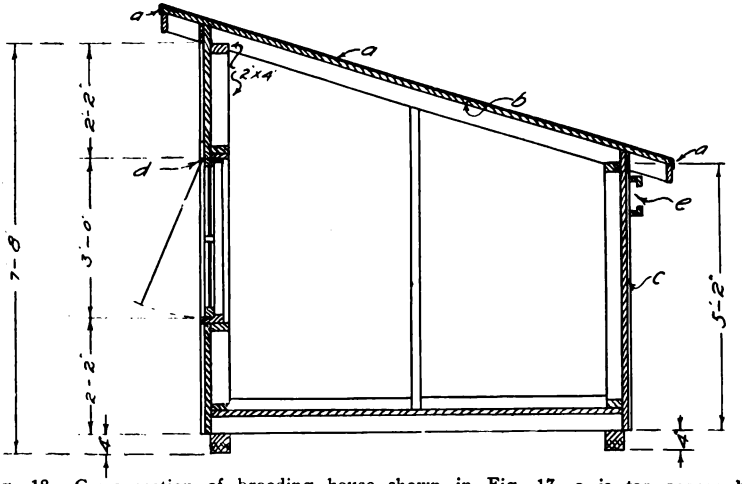


Fig. 18.—Cross section of brooding house shown in Fig. 17. a is tar paper; b roofing; c corner board; d hinge for window; e ventilator.

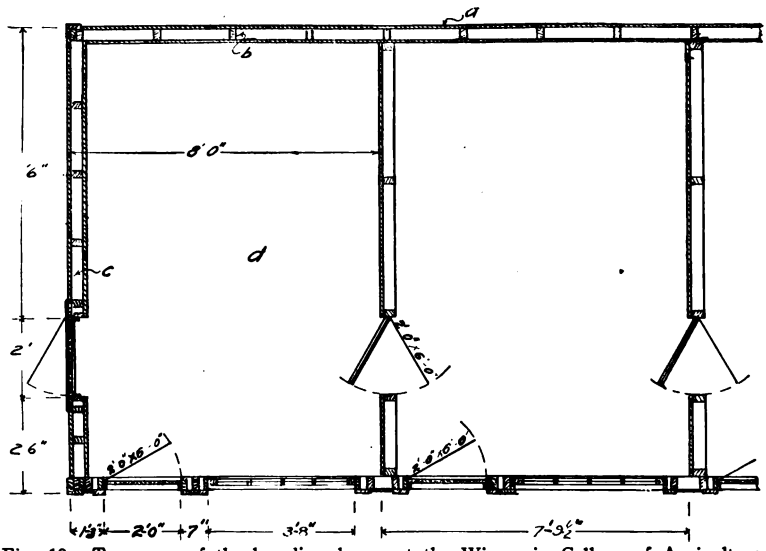


Fig. 19.—Two pens of the breeding house at the Wisconsin College of Agriculture. a is drop siding; b studding; c tar paper.

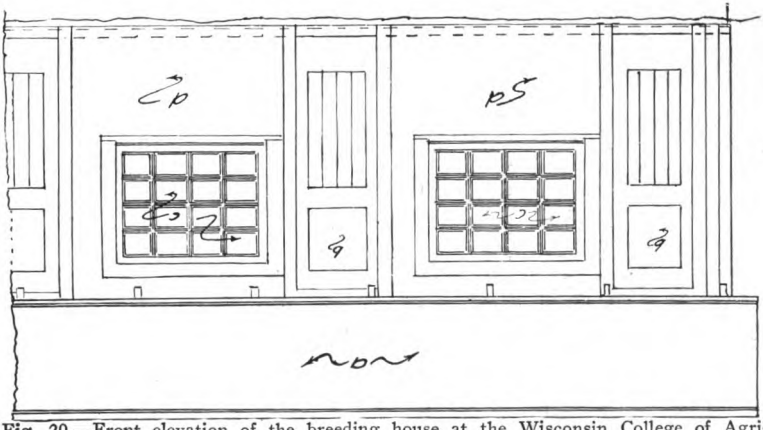
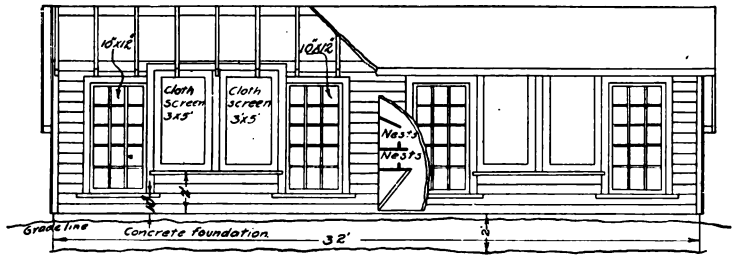


Fig. 20.—Front elevation of the breeding house at the Wisconsin College of Agriculture. a is tar paper; b cloth; c 8x10 inch glass; d drop siding.



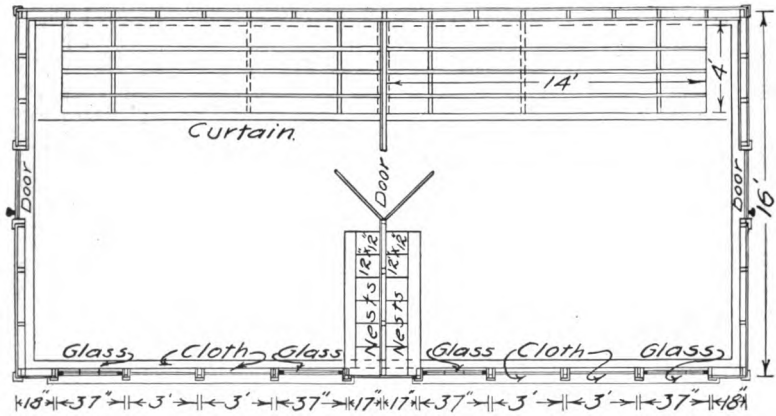


Fig. 21.—A two-pen laying house for a small flock. A cross section is shown in Fig. 22.

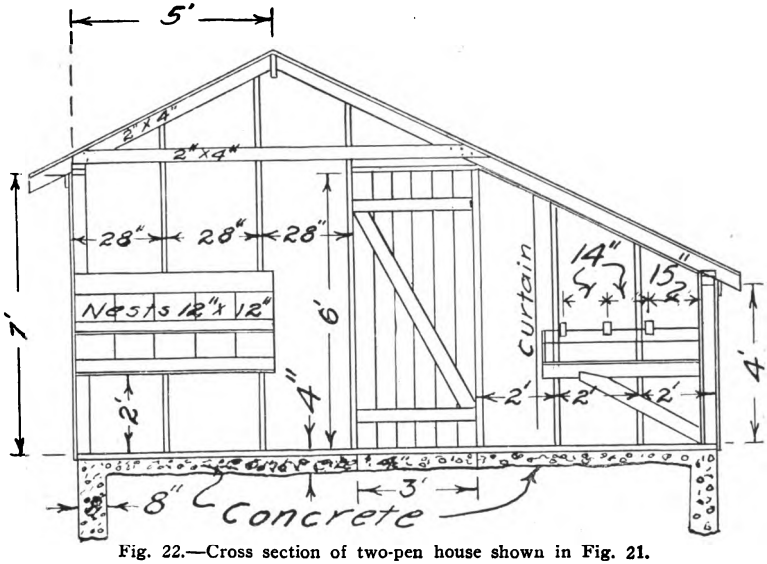
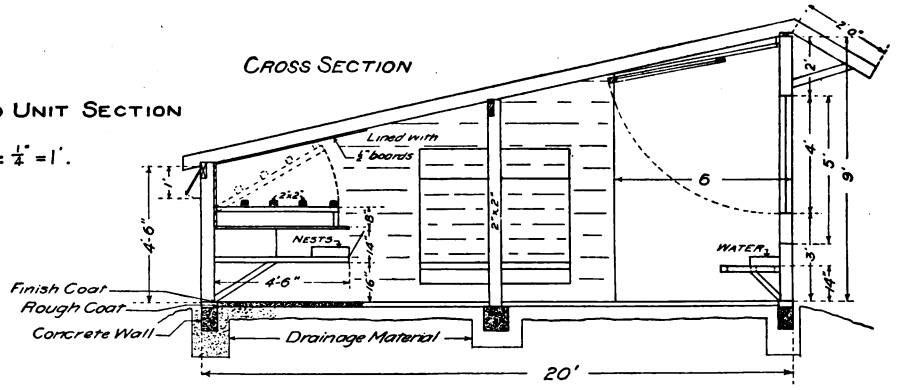


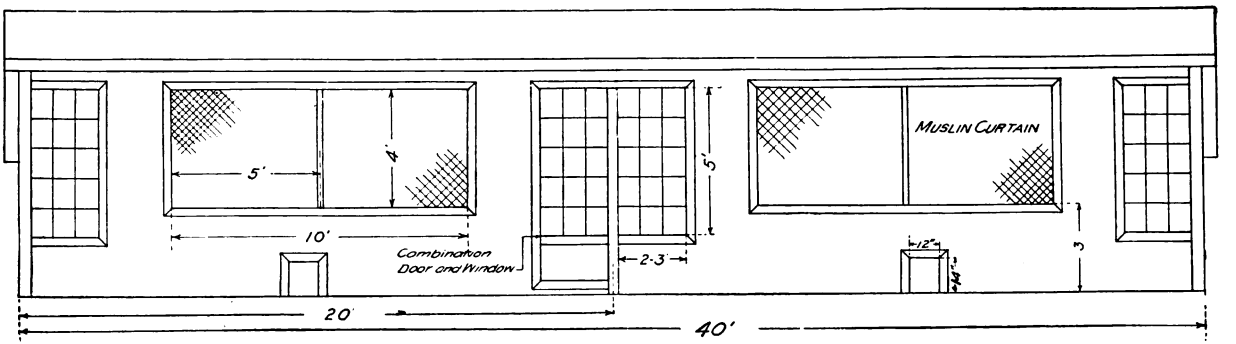
Fig. 22.—Cross section of two-pen house shown in Fig. 21.

Two Unit Section

Scale: $\frac{1}{4}$" = 1'.



Front View



New Jersey Multiple Unit Laying House

Standard Poultry Houses

Designed by New Jersey Agricultural Experiment Station.

By H. R. Lewis and Willard C. Thompson.

The New Jersey Multiple Unit Laying House. For years there has been a growing demand for a standard poultry house, capable of housing a relatively large number of birds, which will admit of indefinite expansion along the same lines of construction to allow for future increase in the size of a plant as the business seems to warrant. With the object in view of working out the plan of such a house, the poultry department has for a number of years carefully investigated various styles and details of construction. The result is that the type of house here described has been recommended and with slight modifications which have been added from time to time, has been adopted extensively throughout the state for commercial poultry production.

The multiple unit idea is standardized as follows. One unit of this house is 20 feet wide and 20 feet deep, having 400 square feet of floor space. Allowing 4 square feet to the bird, which is the standard allowance for the lighter breeds, this unit has a capacity of one hundred layers. The shed-roof construction is used and the house

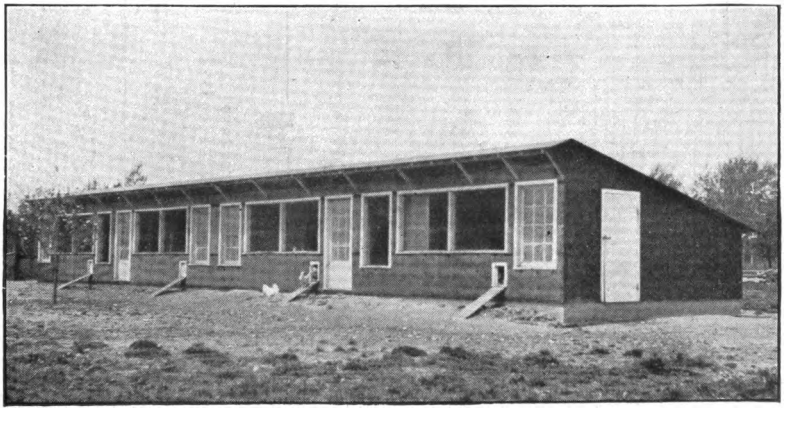
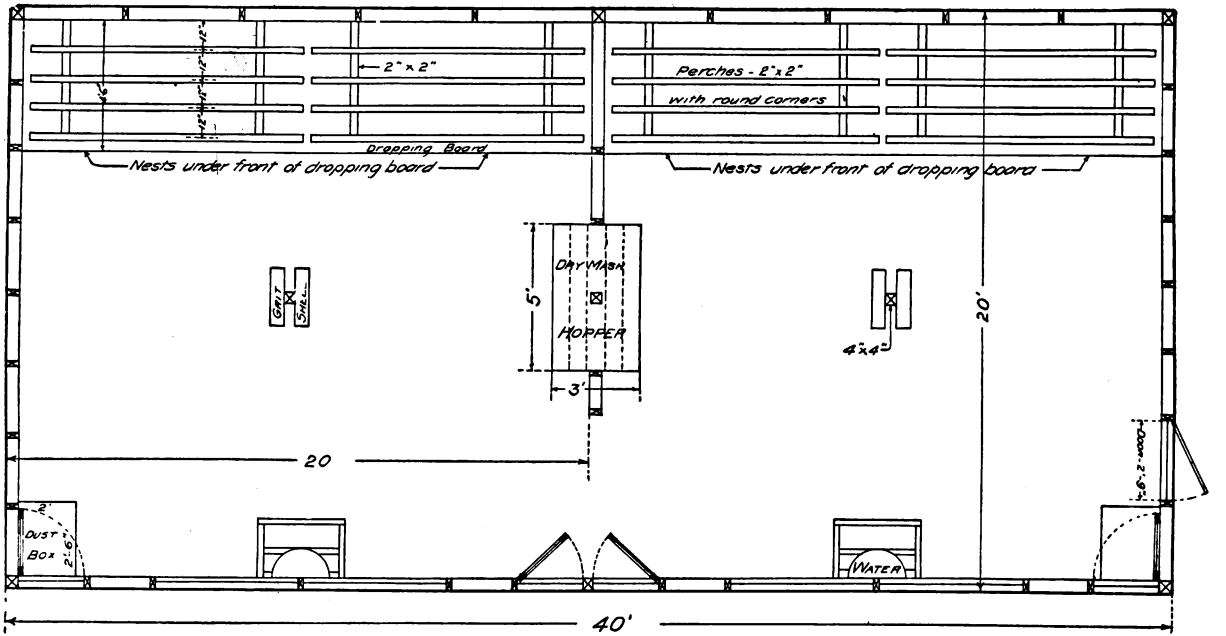


Fig. 1.—Four-section multiple unit laying house with projecting hood on the farm of Charles D. Cleveland, N. J.



NEW JERSEY MULTIPLE UNIT LAYING HOUSE

FLOOR PLAN — TWO UNIT SECTION

SCALE $\frac{2}{5}$" = 1

is so designed in all its details that it will furnish an ideal environment. The front is so arranged that plenty of sunlight can be admitted, and an adequate means for ventilation is provided. The specifications of the house are so planned that moisture can be entirely eliminated, and the standard unit is plenty large enough for the unit capacity recommended.

Specifications of multiple unit house. Since it is usually desirable to maintain a larger flock than one hundred birds, two or more units of this house are generally built together. For the purpose of this circular, in order to show better the possibility of the multiple unit plan, a double unit, or a house 20 feet deep and 40 feet long, has been used. Since it is generally recognized that the concrete foundation and the concrete floor are the most efficient and probably the only suitable types of construction under the greatest variety of conditions, it is always recommended that this plan of construction be followed.

Masonry work. The following description of the foundation and floor construction should be followed carefully. The foundation trench should be dug 3 feet deep and about 1 foot wide. If in moist, damp or heavy soil, a round tile should be laid in the bottom of the foundation trench, pitch enough being given to cause the water to flow to one corner, where it can be led to a low distant place. In open, well drained soils, this tile is not necessary. The trench should then be filled half full of coarse cinders, coarse sifted gravel or crushed stone. This material should be tamped thoroughly, and if cinders are used they should be soaked with water during tamping. The firmer they can be made, the better will be the results. The form for the concrete foundation wall should then be erected on this cinder sub-grade. It should be so built that a wall 8 inches wide and about 2 feet deep will be built. The top of the finished wall should be at least 6 inches above the ground level at the highest point. The form should be braced securely, firmly cleated together and perfectly level. The concrete mixture, which can best be used, should be a 1-3-5 mixture, that is, 1 part of cement, 3 parts of sand and 5 parts of cinders or crushed stone. This mixture should be poured in the form and tamped to bring the water to the surface. Field stone, broken brick, or other coarse solid material of this kind can be tamped into the concrete to act as filler, and thus reduce the cost of the foundation wall.

When within about 8 inches of the top of the form, long ½-inch bolts should be imbedded in the concrete, one every 10 feet. They should be allowed to project above the finished wall about one inch higher than the width of the sill which is to be used. These bolts should have a large flat head, as they are used for the purpose of bolting down the sill, thus holding the house firmly in its place.

The concrete mixture should fill the forms up to within one inch of the top. This latter area should be filled with a wearing mixture composed of 1 part of cement and 3 parts of sand, which should be "float finished," level with the top of the form, and the edges should be slightly rounded to prevent chipping.

The location of each post in the center of the building which supports the purlin should be determined and a concrete pier erected at each point for the support of these posts. The pier should be built similar to the concrete wall and should be about 8 to 10 inches square. The concrete work should be allowed to harden for at least a week before the forms are removed. Two weeks would be safer in dry weather. If the concrete can be wet down thoroughly with plenty of water after it once becomes set, the hardening will be hastened.

The concrete floor can be built before the house is constructed, or after, the time depending usually upon weather conditions. If erected before the house is built, it is usually the best plan simply to lay a rough coat, putting the finish coat on after the house is completed. The floor should be built as follows: After the foundation forms are removed, the soil on the inside of the house should be excavated to a depth of 10 to 12 inches. Six to eight inches of cinders should then be spread over the entire area, wet, and thoroughly tamped. They should be leveled 2 to 3 inches below the finished foundation walls. A rough coat of 2 to 3 inches in depth, consisting of a 1-3-5 concrete mixture, should then be applied over the entire floor, finishing it level with the foundation wall. This should be tamped thoroughly so that the water will be brought to the top, and instead of being "float finished" it should be raked rough in order that the finish coat to be applied later will adhere perfectly and not chip or crack. The finish coat should not be applied until after the sills are laid and bolted, and possibly still better, not until after the house is completed. This finish coat should be about 1 inch thick and should be composed of a 1-2 mixture (1 part of cement and 3 parts of sand), which should be left perfectly level and "float finished." Applying the finish coat after the sills are laid and allowing it to come a little above the lower surface of the sills, seal perfectly any cracks or openings between the foundation wall and the sill. After the concrete work is thoroughly hardened, the actual construction of the house can proceed immediately.

Carpentry work. As will be seen from the following list of materials, the sills for a poultry house of this kind should be constructed of 4 by 6-inch material, or possibly better yet, of 2 by 6-inch material doubled, with joints broken. The sills should be laid to proper size and alignment and firmly bolted to the foundation by means of the bolts previously described. For posts, 4 by 4-inch material should be used, and for all studding and intermediates,

2 by 4-inch material is sufficient. For plates, 2 by 4-inch material is required. The rear plate should be set on edge and at the front it should lie flat on the studding. By using a front plate consisting of 2 by 4-inch material doubled, with joints broken, the house is made a little stronger, especially if it is a long house and in a region exposed to severe wind storms. The roofing rafters are 2 by 4-inch material, supported in the center by a 2 by 6-inch purlin, which is in turn supported every 10 feet by 4 by 4-inch posts, resting on the piers previously described. The house is single-boarded throughout on the ends and front with novelty siding, which gives an attractive outside finish and perfectly smooth wall on the inside. The back is boarded up and down with yellow pine, tongued-and-grooved boards, and is covered with paper to aid in keeping the house warm in cold weather. The roofing boards and all interior partitions, dropping boards and sheathing are built of 1 by 8-inch barn boards, or ship-lap. White pine is used for trim, and it is probably the most satisfactory to use white pine novelty siding for the walls rather than yellow pine, although the latter gives good results if carefully put on and properly painted. Two or three-ply roofing paper is used for the roof. The following special features regarding the design of the house should be understood and appreciated before the framing of the house is started.

The Multiple Unit Laying House is of shed-roof construction with 4-foot 6-inch studding in the back and 9-foot studding in front.

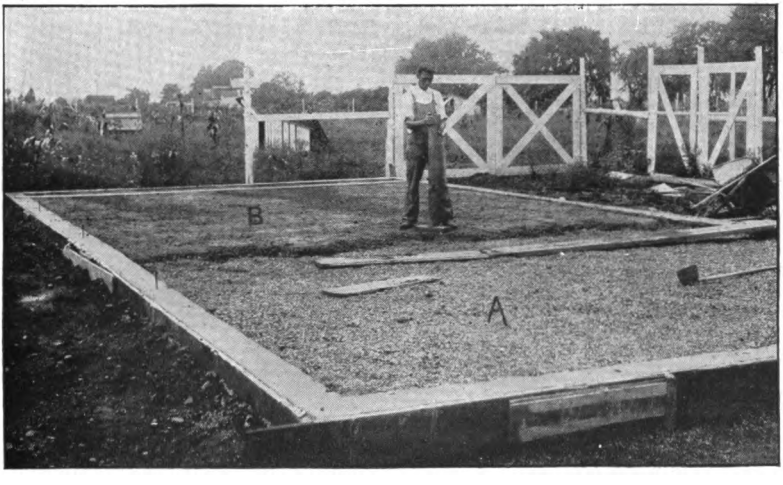


Fig. 3.—Foundation wall complete, showing process of laying the floor: A, Cinder subgrade; B, Rough coat concrete.

It has a 2-foot projection over the front to keep rains and storms from beating in the window and curtain openings. The back wall is provided with rear ventilation, so arranged that the air can enter just under the eaves and circulate between the rafters above the perches. In order to protect the birds on the perches, the rear part of the house from the dropping board up to the plate and from the plate up to the rafters to a point over the front edge of the dropping board is sheathed on the inside, thus making a sort of a protected roosting closet. The dropping boards and perches are arranged along the back wall, and the nests are located under the front of the dropping board, the birds entering from the rear and the eggs being removed through a hinged door at the front. The nests are portable and can easily be taken out for cleaning. The perches are made in complete 10-foot sections. They hinge at the back wall and lift up, hooking to the ceiling so as to facilitate the removal of droppings. The interior of the house is divided every 20 feet by a partition running from the back wall to within 6 feet of the front wall. This is a solid board partition, in the center of which is located a large home-made dry-mash hopper, which is provided with feeding troughs on each side. The water vessels are located on elevated platforms in the front of each section, directly under the curtain openings. A dust box is placed directly under the glass window at each end of the house. The grit and shell hoppers are attached to the purlin supports in the center of each section.

The front of the house is provided with such curtain openings as to provide that plenty of sunlight will be admitted and adequate ventilation take place. Each single section has in the center a large muslin opening 4 by 10 feet, equipped with two hinged curtains 4 by 5 feet each. The hinged arms of these curtains are carried clear to the plate in order that when the curtain is open it will shut up tight against the rafters, thus keeping the birds off of it. The bottom of this muslin opening is 3 feet above the floor. At each side of the muslin opening there is a large glass sash 2 feet 3 inches wide and 5 feet high. One center window in each double section is constructed in the form of a combination door and window opening clear to the sill, thus making it possible to remove litter and do the work in the pens in a more efficient way than by working all sections through one door in the end of the house. One hen exit is located in the center of each section. All openings in the front wall should be covered on the outside with ¾-inch mesh poultry netting in order to keep out sparrows and to confine the birds to the house. The following is a list of material which is required to build a double section multiple unit laying house, together with an estimate of the approximate cost:

Lumber List for 20 by 40-foot Multiple Unit House

Sills:	6 pieces 4″ x 6″ x 20′	hemlock or yellow pine
	or 12 pieces 2″ x 6″ x 20′	hemlock or yellow pine
Plates:	8 pieces 2″ x 4″ x 20′	hemlock or yellow pine
Posts:	2 pieces 4″ x 4″ x 14′	hemlock or yellow pine
	2 pieces 4″ x 4″ x 18′	hemlock or yellow pine
Studding:	9 pieces 2″ x 4″ x 18′	hemlock or yellow pine
	4 pieces 2″ x 4″ x 14′	hemlock or yellow pine
Rafters:	21 pieces 2″ x 4″ x 22′	hemlock or yellow pine
	or 42 pieces 2″ x 4″ x 12′	hemlock or yellow pine
Purlin:	2 pieces 2″ x 6″ x 20′	hemlock or yellow pine

5 pieces 2″ x 3″ x 16′ hemlock or yellow pine. frame for nests and dropping boards.

500 square feet 8-inch novelty siding for end walls and front.

2,000 square feet 8-inch tongued-and-grooved yellow pine boards for roof, dropping boards, rear wall and nests.

200 linear feet 1″ x 2″ white pine for curtain frames and trim.

100 linear feet 1″ x 4″ white pine for nests.

Approximate cost of lumber		$120.84
Roofing paper, 1,060 square feet, or 11 rolls, at $3.00		33.00
Four special sash, at $2.00		8.00
Muslin, 8 square yards, at 20c per yard		1.60
Nails, 10 pounds 20-penny wire; 50 pounds 10-penny wire; 20 pounds 8-penny wire		1.10
Hardware, such as hinges, locks, tacks, hooks and wire		3.65
Foundation and floor:		
Cement, 35 bags, at 50c per bag	$17.50	
Cinders or gravel, 30 cubic yards, at $1.00	30.00	
Sand, 5 cubic yards, at $1.50	7.50	55.00
Total cost		$223.19

In analyzing these cost figures, we find that for all material including the concrete floor, where cinders and sand must be purchased, the total expense is $223.19. This gives a cost for each square foot of floor space of $0.28, or a cost for each running foot of house of $5.58, which means a cost per bird, allowing 4 square feet per bird, of $1.12. During the last two years there has been a 20 per cent increase in the cost of materials, which makes the house materially more expensive than it was from two to three years ago, when it could have been built for approximately $0.88 per bird for all material. The labor item is purposely omitted from the expenses, as it will vary greatly in different sections and under various conditions. In many instances the poultryman or farmer, together with local labor, can put up a house, at seasons when the other work is slack, and do it at much smaller cost than the man who must hire professional carpenters and pay standard wages.

As previously mentioned, this house has been widely adopted throughout New Jersey and nearby states as a type which provides as nearly ideal conditions as it is possible to get under a great diversity of conditions. While the house is designed primarily for large laying flocks, yet it has been frequently used, especially when newly built, as a place for operating large flock colony brooder stoves. The use of the house in this manner the first spring removes the necessity of constructing colony brooder houses and colony range houses the first year, thus allowing the poultryman's initial capital to go further. The majority of these houses are built from 40 to 100 feet long, although there are a number of multiple unit houses in the state which are built over 200 feet long. The accompanying views show representative houses of the multiple type, as used on New Jersey farms (fig. 4-7).

The New Jersey farm unit laying house. While New Jersey is preeminently a state of commercial poultry farms, yet the farm flock interests are probably as great here as in many other states, if not greater. The demand is constantly apparent for an economical house for the farm flock, which will hold from forty to fifty hens. It has been the purpose of the study of this type of house to work out one which will not only be suitable for housing the layers, but which at the same time will be adaptable to colony brooding and will be of such a nature as to admit of standardization on a multiple unit basis. Farm poultry houses are of such a great variety of types of construction that it is almost impossible to work out a system of management which will apply equally to all of them. When working out the farm unit house, it was hoped to reduce the labor cost by slightly increasing the average size of the farm flock, to make possible

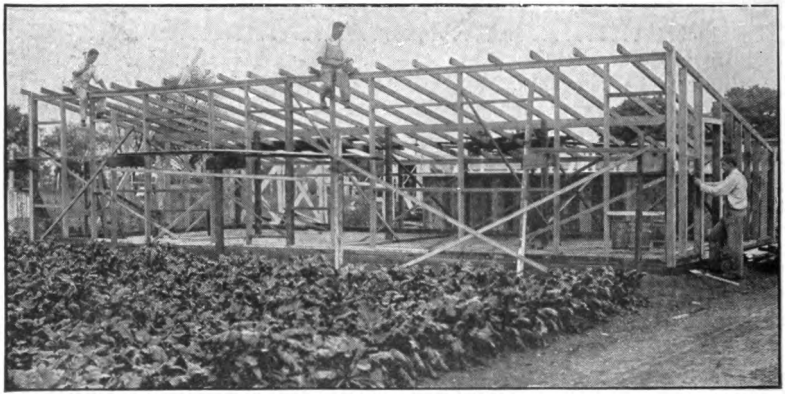


Fig. 4.—Frame of Multiple Unit Laying House.

the development of a definite system in management, and to provide that the flock be well housed, in so far as sunlight, ventilation and dryness are concerned. The ultimate aim was to make the farm flock more profitable by inducing the farmer to build a suitable house and enable him to become more enthused and interested in the management of his flock.

This house has been used extensively as a brooder house for a coal-burning colony brooder. Its area is adequate to take care of from three hundred to five hundred chicks up until the time the cockerels can be sold for squab broilers. From this time on the stove can be removed and the house will take care of the remaining pullets throughout the growing period. The large amount of ventilation allowed makes this house especially desirable for late spring and early summer brooding when a house of more closed design is extremely hot.

Figure 7 shows the complete working plans for the farm unit laying house. The following specifications will make the plans clear and can be used as building instructions by a contractor. The house is 12 feet wide and 14 feet deep, with a shed-roof construction, with 5-foot studding in the back and 8-foot studding in front. There is a 2-foot projection over the front to protect the interior of the house from rain and snow. The house is of such size that it is hardly feasible to attempt to move it about. It is most satisfactory if permanently located on a concrete foundation and provided with a concrete floor. If for any reason it seems more desirable, the house can be provided with a wood floor and can be elevated about a foot above the ground on hollow tile or posts. The house is provided

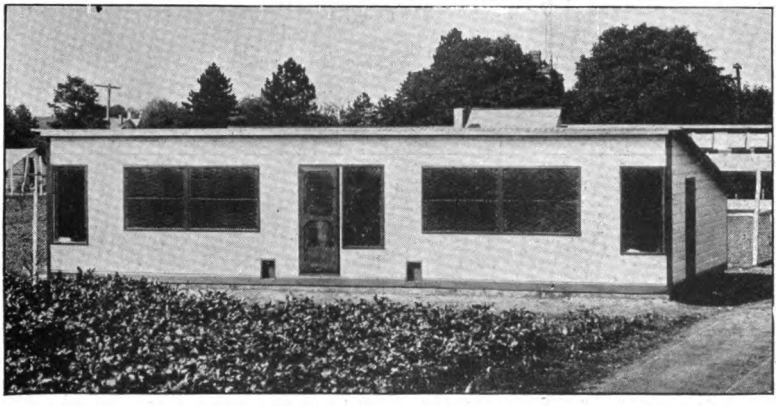


Fig. 5.—Multiple unit laying house complete. The double section house, 40 feet by 20 feet, with a capacity of 200 birds.

with back ventilation under the rear eaves, as described for the multiple unit laying house. The arrangement of nests, perches and dropping boards is exactly the same, specifications varying only in dimensions to make them conform to the smaller size of the house. The area back and above the perches should be double-boarded to protect the birds against drafts, the muslin curtain should be hinged at the plate, and the glass sash should be hinged at the side and open slatted platform at the center of the front wall and the hoppers are arranged at convenient heights along the side wall. The sills of the farm unit house are constructed of 4 by 4-inch material and the studding and plates of 2 by 4-inch material. The roofing rafters are constructed of 2 by 4-inch material supported at the center by a 2 by 6-inch purlin. Both the side walls and front wall should be single-boarded with white or yellow pine novelty siding, either the 6 or 8-inch width being satisfactory. The back wall and roof are covered with 1 by 8-inch ship-lap barn boards, overlaid with two-ply roofing paper. All openings in the front are covered on the outside with ¾-inch mesh poultry netting to keep sparrows out and to confine the birds to the house when necessary. The following is a list of materials which will be required to build the New Jersey Farm Unit Laying House, together with the approximate cost of such material at current prices:

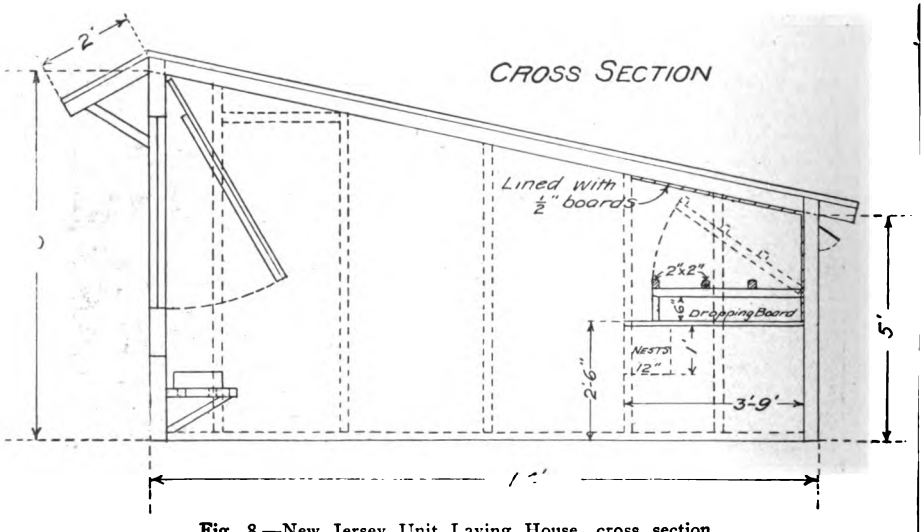


Fig. 8.—New Jersey Unit Laying House, cross section.

Lumber List for Farm Unit Laying House.

Sills:	2 pieces 4″ x 4″ x 14′ hemlock or yellow pine
	2 pieces 4″ x 4″ x 12′ hemlock or yellow pine
Plates:	4 pieces 2″ x 4″ x 12′ hemlock or yellow pine
Posts:	2 pieces 4″ x 4″ x 14′ hemlock or yellow pine
Studding:	6 pieces 2″ x 4″ x 14′ hemlock or yellow pine
Roof rafters:	7 pieces 2″ x 4″ x 16′ hemlock or yellow pine
	1 pieces 2″ x 4″ x 14′ hemlock or yellow pine

500 square feet 8-inch yellow pine, tongued-and-grooved boards for roof, door and interior fixtures.
300 square feet novelty siding for walls.
60 linear feet white pine 1″ x 3″ material for curtains and trim.
30 linear feet white pine 1″ x 2″ material for trim.
Roofing paper, 300 square feet.
Two glass sash, each 3′ x 5′, outside measurements.
Muslin, wire netting, hinges, nails, and other hardware.
Concrete foundation and floor: Cement, 10 bags; cinders or gravel, 7 cubic yards; sand, 1 cubic yard.

As will be seen from a study of the above list, the total of all material without considering labor is $65.68, or a cost per square foot of floor space of $0.39, or a cost per running foot in length of house of $5.49. Allowing 4 square feet per bird, or a capacity of 42 birds, we find that the cost per bird is $1.56. No item is allowed for labor on account of the possible variation in this feature under different conditions and in different sections.

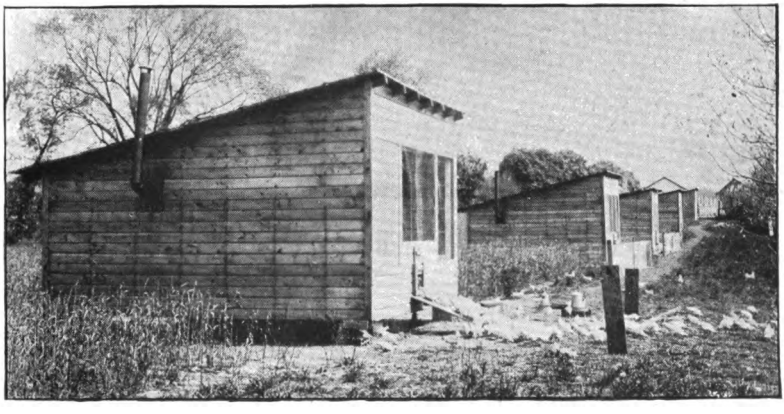


Fig. 9.—A row of farm unit laying houses temporarily used for colony brooding stoves in the spring. Here the pullets are brooded and reared and later housed as laying stock.

The accompanying photographs illustrate the use of these farm unit houses as they are adapted to the farm laying flock, and as they may be used for colony brooding (fig. 9). When used for the latter, the plan is to cut a hole through the side wall or the roof, properly insulating it with asbestos or tin, and to run the pipe of the coal-burning brooder stove through the opening. This house is well adapted to laying flocks, breeding flocks and colony brooding.

The New Jersey Vineland contest house. The Vineland International Egg Laying and Breeding Contest, which the New Jersey Agricultural Experiment Station is supervising at Vineland, has created much interest throughout the country, because of the breeding feature which is new in contests of this kind, and also because of the high production which is being secured. This performance is due in large part to ideal environmental conditions which are determined primarily by housing conditions. The popularity of the contest has created a constant demand for plans and specifications covering the house used. It is, therefore, deemed appropriate to present them here.

This house is of such size and construction that it might well be used as a summer range house, as a laying house for a small flock, or as a pedigree breeding house for selected matings. Figure 11

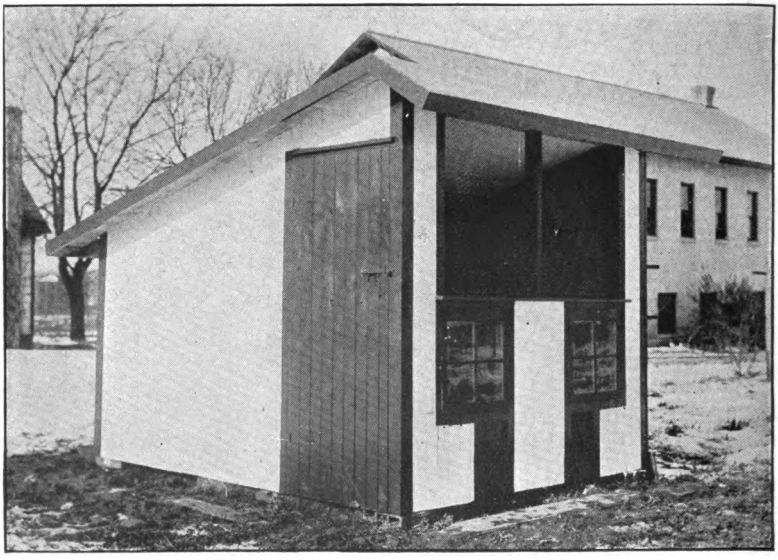


Fig. 10.—Vineland colony house. Note overhanging roof, the glass sash hinged under the muslin opening, and the very simple construction.

shows the plan of this house in all its details. The house is designed to be portable and is rarely put on a concrete foundation. It is used at Vineland with a dirt floor, the house being supported on concrete blocks at the corners and at the middle of each side wall. About 6 inches of gravel is used as a floor surface. These houses have proved exceptionally dry, warm, well ventilated, sunny and sanitary. It is believed that persons using a house for any of the above purposes cannot do better than to consider this plan seriously. The house is 8 feet wide and 10 feet deep, with a shed-roof construction, the height being 5 feet 5 inches over all in the back and 8 feet in front, with a projecting hood over the front 18 inches wide. The dropping platform is arranged at the back, on one end of which is constructed a broody coop of plaster lath. Most of the front is open. There is a large muslin curtain 4 feet wide and 6 feet long in the upper part of the front wall hinged at the top and shutting tight up against the rafters when open. Under this there are two glass windows hinged at the top and opening out. There are two hen exits, placed directly below the windows. The windows and exits are so placed as to provide for double yards for each house, the division fence meeting the front of the house at its center.

The following is a list of material which will be required to build this house. It will be noted that all materials used are substantial and such as to make the house essentially permanent. It is possible to build the outside walls of ship-lap siding as specified, or as at

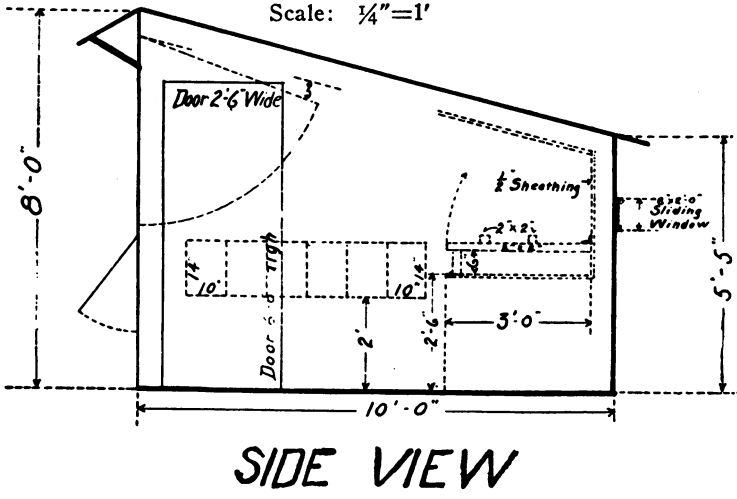
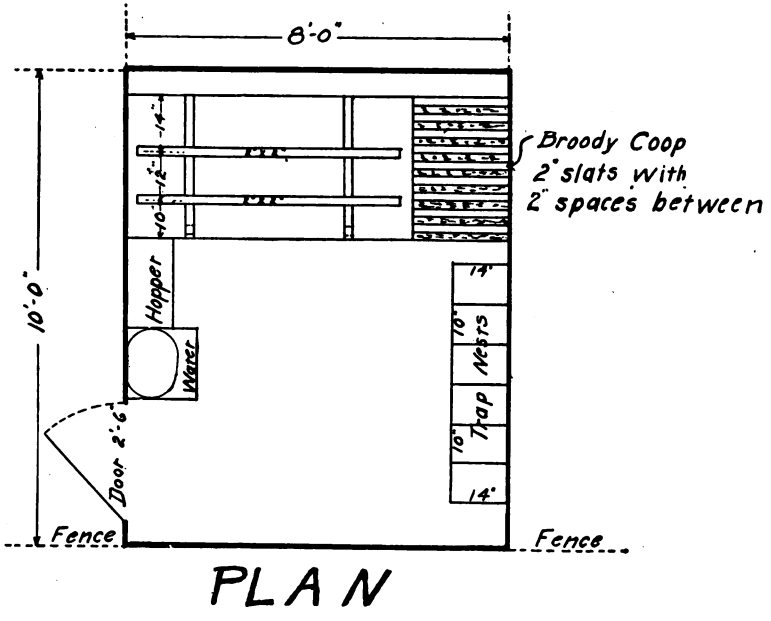
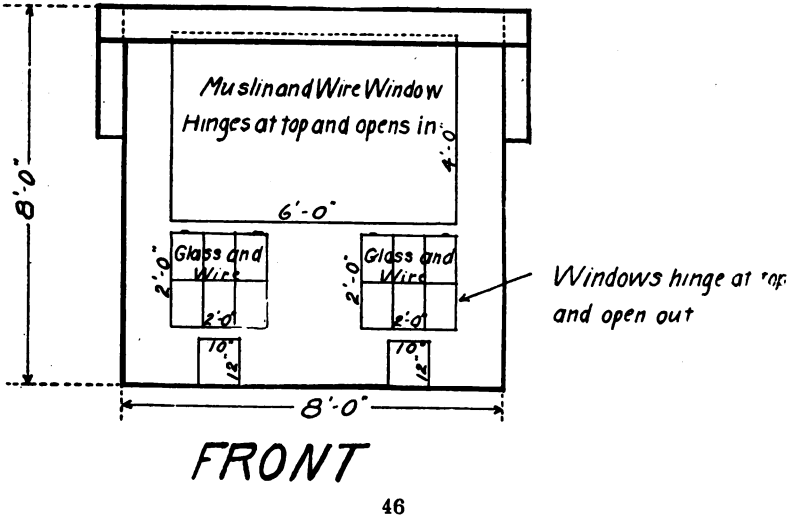


Fig. 11.—Working plans of the Vineland colony house.



PLAN



FRONT

Vineland they may be built of 6-inch tongued-and-grooved yellow pine boards beaded on one side. This latter, while being a little cheaper, is not quite as attractive, nor does it make quite as tight a wall as the novelty siding. The roof is covered with two-ply roofing paper and the back ventilation is provided for by a slide door. The rear part of the house is sheathed on the inside, according to the standard specifications, to protect the birds on the perch.

Lumber List for the Vineland Contest House

Sills:	2 pieces 4″ x 4″ x 8′	hemlock or yellow pine
	2 pieces 4″ x 4″ x 10′	hemlock or yellow pine
Plates.	2 pieces 2″ x 4″ x 8′	hemlock or yellow pine
Studdings	4 pieces 2″ x 4″ x 20′	hemlock or yellow pine
Rafters:	5 pieces 2″ x 4″ x 12′	hemlock or yellow pine
Perches and support:	2 pieces 2″ x 2″ x 12′	hemlock or yellow pine

150 square feet 8-inch ship-lap for walls, front and side.
200 square feet 8-inch yellow pine, tongued-and-grooved, for roof, back wall and fixtures.
100 linear feet 1″ x 3″ white pine for trim and curtains.

Approximate cost of above lumber	$23.50
Miscellaneous articles:	
200 square feet roofing paper	6.00
2 regular sash	.90
Hardware, muslin, etc.	2.10
Total cost	$32.50

The total cost of this house, constructed according to the above specifications, is $32.50 for all materials. This means a total cost per square foot of floor space of $0.40, or a total cost per running foot of $4.06, or a cost per bird, allowing 4 square feet per bird, of $1.60. With special matings, where the highest possible production is desired, as is the object at Vineland, twenty birds at the most are kept in this house. The adaptability and usage of this house has been previously mentioned, and it is believed that it will be especially useful for the purpose designated under New Jersey conditions.

Conclusions. These three house types are recommended to New Jersey poultrymen in the belief that they will fit our conditions as well as or better than any other kind of poultry house. They have been tested and tried. They are at present generally adopted throughout the state for poultry flocks both large and small. The poultry department of the State University at New Brunswick will be glad to advise directly regarding any specific housing or location problems.

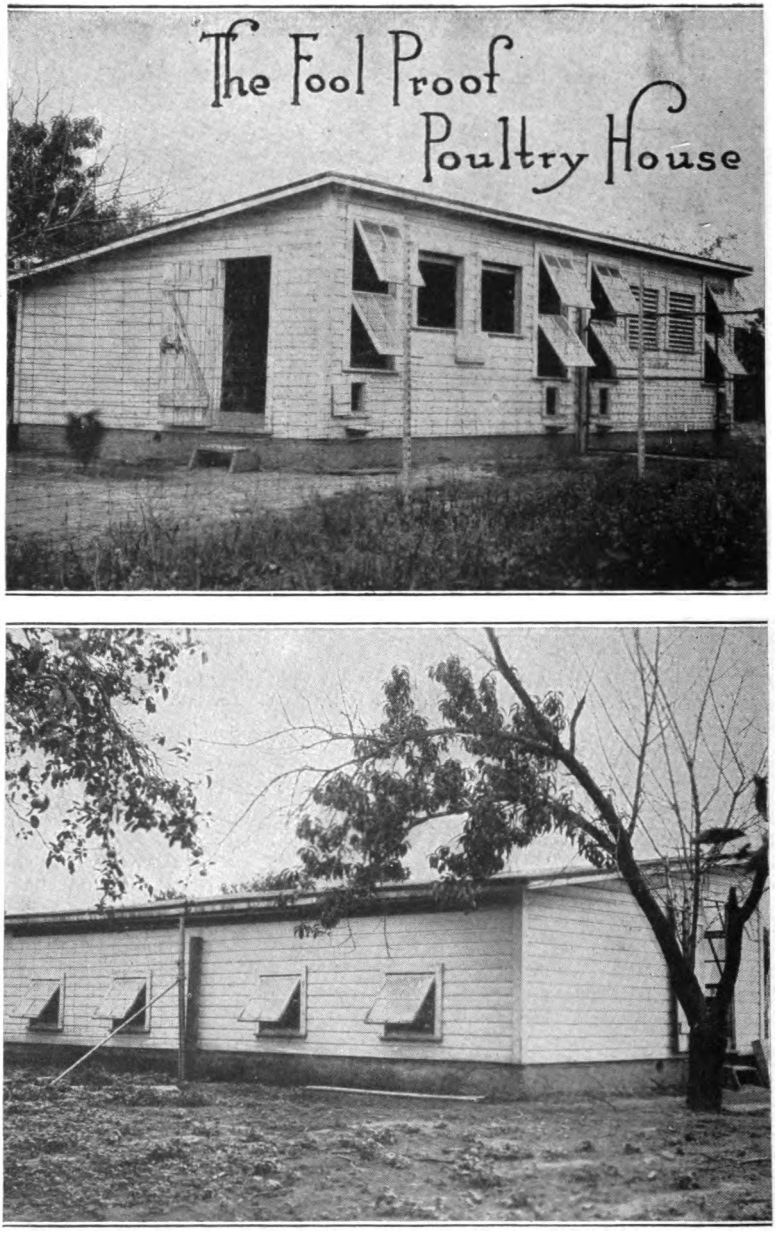


Fig. 1.—The Fool-Proof Poultry House designed by the Missouri Poultry Experiment Station. Front and rear views. The illustrations show two sections. A single section is 14 ft. square and has a capacity of 50 to 65 hens.

The Fool-Proof Poultry House

Designed by the Missouri Poultry Experiment Station.
By T. W. Noland.

The more nearly "fool-proof" a poultry house can be made, just that much more certain will the average person be of succeeding in the production of poultry and eggs at a profit. The meaning of "fool-proof" as applied to this poultry house is that the house needs no adjustment, always being ready for use. Much of the loss and many of the ills and disappointments met with in poultry raising can be traced directly to poorly constructed, badly ventilated, inconveniently arranged, and improperly located poultry houses. A poultry house need not be elaborate or expensive. The "fool-proof" poultry house can be easily and economically built. It was designed with a view of economy, simplicity, comfortableness, convenience, dryness, cheerfulness and sanitation. It is free from many of the freak notions and ideas embodied in many of the modern poultry houses, doing away with many things which the average poultryman will not take the time to do. The attention to details is all eliminated in the "fool-proof" poultry house. We unhesitatingly recommend it to the farmer, the city back-lot poultry raiser, the commercial egg farmer, and all others desiring an up-to-date and satisfactory poultry house.

Before attempting to build a poultry house, first consider the purposes for which the house is intended and the size of the flock it is to accommodate. Is it to house a pen of breeders? Is it to be used as a colony house? Or is it intended as a general-purpose house or a laying house? Consider these facts, then build the size house which comes nearest meeting your requirements. This book describes and contains plans in detail for a colony house, a breeding house and a laying house—all similar in most respects—varying only in size and interior arrangements.

Judging from appearances, as a rule, any old shack is a perfectly satisfactory home for the hens. Of course, there are exceptions, but taking the states over, the average farm henhouse is poorly constructed. It is damp, filthy, and full of cracks.

And yet there is no class of live stock on the farms that will more quickly repay the owner for a good home than will the hen. One winter egg is worth from three to five summer eggs, and the greatest single essential to the winter egg production is the proper kind of house. Again, improper housing is the contributing cause of many poultry ills. By seeing to it that our hens are properly housed we will advance ourselves well along on the road to success in the poultry business.

A house should have uniformity of temperature, economy and simplicity of construction.

Before we discuss the plan of this house in detail let us consider, briefly, some of the principles and problems of poultry house construction. A good poultry house need not be expensive; in fact, should not be. Frills won't make winter eggs. Quite a sum of money has been foolishly spent on elaborate poultry houses, designed to please the fancy of their owners rather than to satisfy the actual needs of the hens that were to occupy them. A practical poultry house should afford perfect protection from storms, plenty of sunshine during the winter months, and an abundance of fresh air, without drafts. It should be absolutely dry, for dampness is fatal to poultry. This house, which is herein illustrated and described, fulfills all of these requirements to an admirable degree.

Location. The proper location of the poultry house is very important. No matter how good your house may be, if it is located in a low, damp place, where the yard surrounding it is wet and the land sour, your house cannot overcome all of these evils. It should be

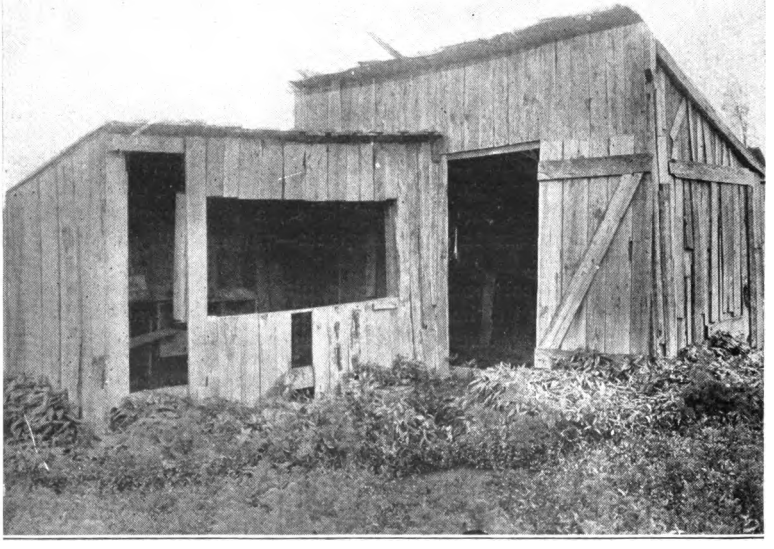


Fig. 2.—Houses like this are not suitable homes for hens.

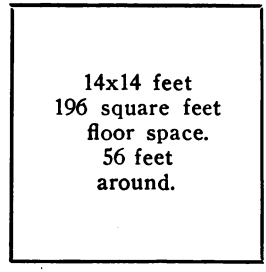
placed upon high, well-drained ground. We prefer sandy, gravelly, or light, porous soil. Heavy clay soils should be avoided. They are hard to keep sanitary. If the ground does not drain well naturally, never place a poultry house on it until you have provided for underdrainage with tile or by open ditches. Water should never be allowed to stand in the poultry yards. A wet soil is colder than a dry one. Muddy feet mean dirty eggs, and dirty eggs mean washed eggs and low prices. Dampness breeds colds, catarrh, roup, rheumatism, pneumonia and tuberculosis. Air drainage is also very important. Never locate the poultry house in a low, flat place where the air is always damp. Face the house to the south, and if possible, it is not a bad idea to protect it on the north and west by trees, which act as a windbreak. The ground on which the house is located should preferably slope to the south or east.

The house should be placed conveniently to the other farm buildings and close to the dwelling house. The feed and water supply should be taken into consideration. If the poultry house is placed rather close to the dwelling, they should be separated by a chicken-tight fence. Nothing is more trying on a woman than to have the hens make their headquarters on the back porch or back doorstep. Locate the poultry house so that you may make additions to it or to your poultry farms and yards, and thus avoid future expense of moving and remodeling.

Size and shape. The size of the house will vary with the purpose for which it is intended—that is, our "fool-proof" colony house is ten feet deep and twelve feet long; the "fool-proof" breeding house is built in sections, fourteen feet square; and the "fool-proof" laying house is built in sections twenty feet square. The length or number of sections in the breeding or the laying houses will depend upon the number of hens which one desires to house. Under average farm conditions for the larger breeds, such as Plymouth Rocks, Orpingtons, and similar varieties, about four square feet of floor space should be allowed for each hen. For Leghorns, about three feet of floor space is sufficient. We would prefer to provide too much floor space rather than too little. The crowded and congested conditions of many poultry houses have sapped the vitality of their flocks and resulted in failure in many such cases.

The form of the building influences the cost of construction. Square houses or sections of houses economize lumber.

7x28 feet—196 square feet floor space.	70 feet around.



In the top figure more square feet of wall space are exposed and there is extra cost in building. Experience has proved that the house should be moderately deep, both from the standpoint of the welfare of the hens and economy in construction. For instance, you can see in the figure above that a house fourteen feet square contains the same number of square feet of floor space as does a house seven feet deep and twenty-eight feet long, yet the cost of the construction is considerably less than the latter. A "fool-proof" poultry house fourteen feet square will accommodate about fifty Plymouth Rocks or sixty-five White Leghorns.

The Heighth of the house. The poultry house should be high enough to enable the poultryman to work in the house without stooping. A 10x12 foot colony house should be eight feet in front and six feet in rear. A 14x14 laying or breeding house should also be eight feet in front and six feet in rear. The south side of the house should be sufficiently high so the sun can extend well toward the rear of the house.

The foundation. Some use brick and some stone for foundation material in the stationary laying and breeding houses. Others use posts or allow the sills to rest on the ground. All of these are more or less objectionable. The best foundation is made of concrete. This should be built deep enough to prevent rats from burrowing under it and to keep frost from heaving it. We usually make the foundation wall four inches thick and twelve to eighteen inches deep. It should be from eight to twelve inches above the ground on the outside at the high point. A four-inch concrete wall is heavy enough to support the "fool-proof" poultry house.

The floor. There are three general types of poultry house floors now in use: dirt, board, concrete. Each has certain points of advantage and of disadvantage.

The dirt floor is the cheapest and in most common use. There are many serious objections to a dirt floor, however, objections which should preclude its use, except in very rare instances. Where a dirt floor is used there is almost always a tendency to dampness, which is injurious to poultry. The dirt floor is also insanitary. Wherever poultry is kept there are always more or less disease germs. When once they find lodging in the dirt floor, it is a task to get rid of them. A dirt floor is also dusty. During the winter months a litter of straw should be kept in the henhouse in order that the hens may be kept busy scratching during inclement weather. Where the floor is of dirt, the straw has to be changed two or three times as often as it would if the floor were of wood or concrete. If the dirt floor should

be dry, the dust which the hens raise in scratching is very unhealthy. Where, for purposes of economy, it is decided that a dirt floor must be used, fill in floor six to ten inches above the level of the outside yard, tramp down thoroughly that the surface may become hard. The floor will last much longer by so doing. Then, when feeding in the litter, the birds can get the grain. If the dirt is left loose, the grain will work down into the floor and is wasted.

Wooden floors are in rather common use and are very satisfactory as they are not quite as expensive as concrete and are warmer in winter, but will not last as long as a concrete floor. When using wooden floors in a poultry house, be sure that you provide some means of ventilation underneath the floor, through the concrete foundation for a circulation of air underneath the floor. This will keep the sills and sleepers from molding and they will last much longer. Four-inch tiling placed in concrete form when building foundation makes a good ventilator. This should be covered over with fine mesh wire to prevent rats from getting underneath the house. This should be closed up in cold weather.

Concrete floors are the most durable of all floors, although the cost of building is some greater than the wooden or dirt floors. There are, however, a few objections to concrete floors. The first of these is that they are too cold. The second is that they are too hard and that heavy chickens dropping down on them get bumblefoot, rheumatism, etc. When the floor is made, the surface should be troweled perfectly smooth with a batter of pure cement and water. If you will do this you will experience no trouble of the hens wearing their toenails off while scratching for the grain. The main thing is to see that you provide for plenty of drainage underneath the floor and have the floor higher than the level of the ground outside the house.

Constructing a concrete foundation and floor. Any farmer can make a first-class concrete foundation and floor if a few simple rules are followed. A great many people imagine that the services of an expert are required in order to do good cement work, and therein lies the main reason why more of this valuable material is not used on the average farm.

The materials required for making a concrete foundation and floor are a good grade of Portland cement, clean, sharp sand and gravel or chats, and lumber for making the forms. About sixteen sacks of cement and five and one-half yards of sand and gravel will be required to make the foundation and floor for a henhouse fourteen feet square. The lumber used in the forms can later be used in building the house.

In preparing to make the foundation, the first thing to do is to mark off the size of the house and set up the outside forms. A spirit level should be used in order that the top of the forms which are to determine the surface of the floor may be exactly level. The forms should be well braced on the outside. (See Fig. 3.) You should have

the top of your foundation at the lowest point from eight to twelve inches above the ground at the highest point.

After the outside forms are set and leveled up, the next thing is to dig a trench four inches wide just inside of the forms all the way around. This trench should be dug deep enough so that the ground will not freeze underneath the foundation in winter, this causing it to heave. These trenches should be at least fifteen to eighteen inches deep, and if in a very cold climate, be sure and get below the frost line.

We are now ready to put in the concrete. The mixture for the foundation should be seven parts gravel and sand or chats to one of cement. Mix the dry cement and gravel thoroughly and then wet it down. Stir the mixture with a shovel or turn it over while the water is being added, and keep adding water until the mixture is slushy and thoroughly wet.

Fill the trench level with the surface of the ground with the mixture, tamping it down quite firmly. This done, you are ready to set up the inside forms. The top of these forms should be three inches lower than the top of the outside forms, in order that the floor may be laid over the top of the foundation, making a neater, smoother job.

After the inside forms are properly set and braced, fill in the concrete mixture so that when tamped down the foundation will be level with the top of the inside forms. After the foundation has had one or two days in which to let the cement "set" the inside forms can be removed, and we are ready to put in the floor. Bolts should be put in the foundation so that the 2x4 sills may be bolted to the floor and foundation.

In preparing to put in the concrete floor, the first thing to do is to fill in the interior of the foundation wall with dirt, cinders and gravel, thoroughly tamped down, three inches lower than the top of the foundation. This done, we are ready for the concrete. (Fig. 3.) The first layer of concrete should be mixed in the proportion of one part cement to seven parts gravel or chat. This first layer should be about two inches deep, leaving room for a top coat one inch deep. For the top coat only clean, sharp sand should be used. It should be mixed with the cement in the proportion of one part cement to two parts sand.

After the top coat is on, the surface must be made very smooth. This can best be done by mixing up a batter of pure cement and water, and troweling it down carefully. If the weather is hot and dry, the floor should be covered with two inches of wet sand after the surface has had two or three hours in which to harden. The moist sand prevents the floor from drying out too rapidly and makes a harder floor. The forms may be taken down after two or three days, but the floor should be let stand a week before the balance of the building is put up. You may go to work on it in two or three days if

you are careful and do not allow lumber or tools to fall on the concrete and crack it or chip off pieces. A concrete floor constructed in this manner is easily cleaned, durable, rat-proof and dry. The things which must not be forgotten are that the foundation and floor must be higher than the ground on the exterior of the house; you must fill in just underneath the floor with a few loads of cinders or small stones and gravel; don't make the floor more than two or three inches thick, and be sure that the last finish or top layer of the floor is a batter of pure cement and water. (See Fig. 4.)

Spread a thin layer of this over the floor and allow it to become partially dried out or hardened until it trowels nicely; then trowel it until it is perfectly smooth. Be sure to put in gravel, cinders or rock underneath the floor for drainage.

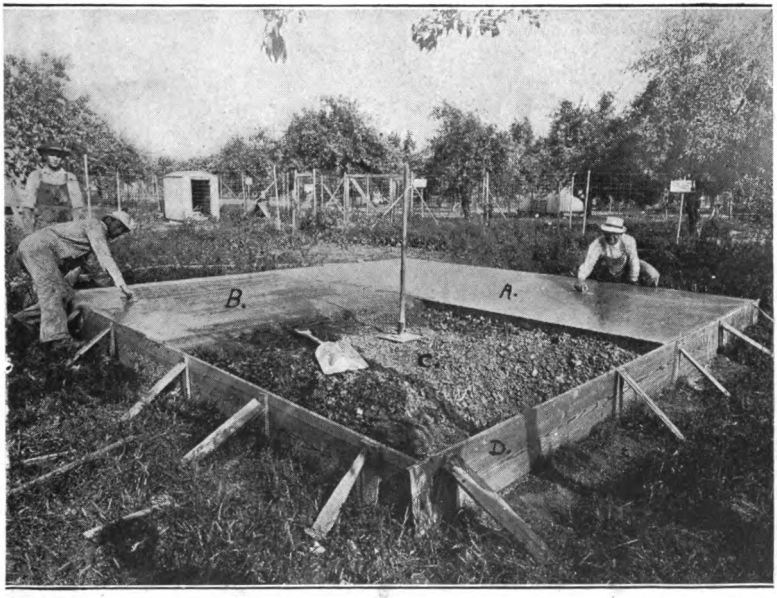


Fig. 3.—The plan of putting in the form for concrete foundations and floors. Use a board the width of the foundation desired, braced well with stakes. This makes a good and simple form for the foundation. Have the top of the boards level and let this be the top of the floor. Dig a trench four inches wide and twelve inches deep on the inside of the form. Fill this with concrete, and this forms a foundation and makes it rat-proof. D shows the form which has been built to retain the concrete and filler. C shows the cinders and rocks which are used as fillers and for drainage beneath the floor. B is the three inches of concrete which forms the body of the floor. This concrete may be leveled down with a sixteen-foot straight-edge, or a sixteen-foot 2x4, by dragging it along on the edge of the forms. A shows the thin finished coat of pure cement and water mixed and troweled down perfectly smooth.

The walls. We do not want a high poultry house. Such a house is too cold in winter and unnecessarily expensive. For these reasons we would make the walls of our house as low as convenience and the requirements of our hens will permit. This has been found to be six feet in the rear and eight feet in front. The material should be some kind of matched lumber, such as car siding or ship-lap. We prefer the matched lumber for the reason that we are not so apt to have objectionable cracks in the house. The walls must keep out rain, snow and cold winds. The walls on the north, east and west should be so built that every opening can be closed and made perfectly tight when desired. Ordinary boxing with the cracks battened makes a very good wall. The battens should not be put on until the house becomes settled so that the shrinkage of the lumber will not split the battens and leave cracks in the wall.

The shape and kind of roof. Fig. 5 shows four types of roofs commonly found on poultry houses. All except the single-span or shed roof in the lower right-hand corner have four serious faults.. First, the services of a skilled carpenter are required to frame them. Second, they are unnecessarily expensive. Third, they do not admit

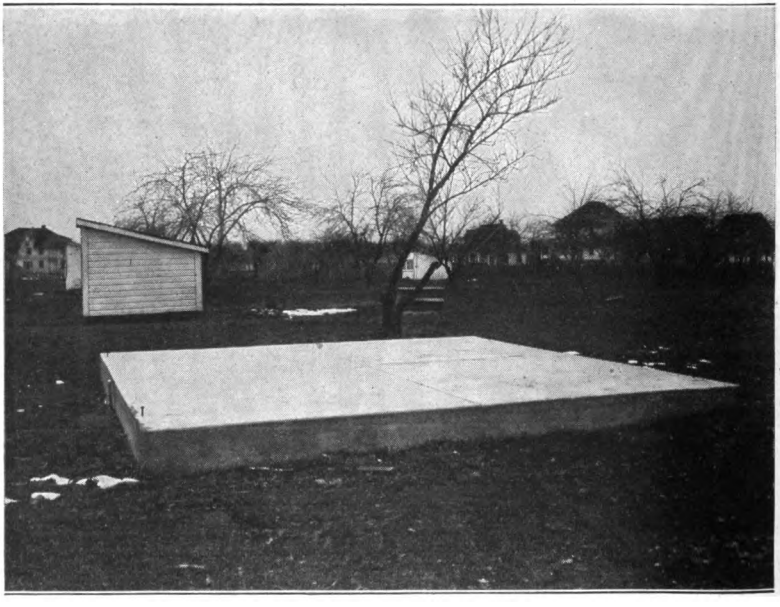


Fig. 4.—A finished concrete floor and foundation, 14x14 ft., ready to receive a fool-proof poultry house.

sufficient sunlight during the winter months. Fourth, in each a portion of the roof slopes toward the south, catching the vertical rays of the sun in the summer, and making the house several degrees warmer than it would be if it sloped entirely toward the north.

Fig. 5A shows a semi-monitor roof. This is an expensive roof and difficult to build.

Fig. 5B is a monitor roof and is still more expensive. It contains too large an air space in the roof to be satisfactory in most climates.

Fig. 5C makes a very good roof, but the long slope is to the south and you have two sets of rafters.

Fig. 5D is a plain shed roof and is the most satisfactory of all. A 16-foot rafter will reach from front to back in our 14-foot "fool-proof" poultry house. It is easily and economically built. It turns all the water to the north or back of the house, leaving the front dry and warm. In winter months the sun can shine to the rear of the house as can be seen by the line of the sun's rays G and E. The shed roof is the most sensible roof which can be used on the average poultry house.

The rafters should be covered with sheeting or boxing. Over this we put a layer of good composition roofing paper. This will outlast shingles on such a roof and can be more quickly and easily laid. It is also cheaper than shingles. Boards covered with a good grade of roofing paper are all that is needed to make a satisfactory roof.

Windows and sunshine. You must have light and a reasonable amount of sunshine in your poultry house. Sunshine is Nature's disease destroyer. In our 14-ft. houses and also in our colony houses we build two full-sized windows in the front of every section, one window on each side of the ventilators. The windows should always run up and down and not lengthwise of the house. A long narrow window running the full length of the house will not admit the sunlight that two windows do when both run up and down. The two sashes of each of the front windows are hinged at the top and raise out at the bottom as shown in Fig. 20. The top sashes are hinged at the top with hinges and bottom sashes are fastened by using a stop-pin as a hinge, allowing them to be pushed out at the bottom the same as the top sashes.

A properly lighted house adds good cheer and also increases egg production, for it enables the hens to feed for a much longer period before going to roost each evening. With this idea in view, and for the purpose of affording a better system of ventilation during the hot summer months, we place two window sashes in every 14-foot section and below the level of the dropping boards in the rear of the house. These windows are four glasses to each sash, 10x12 inches. This sash is hinged to the top and opens outward, as shown in Fig. 21. In the summer months this is open, and it makes the house very cool and comfortable. The hens suffer as much from heat in summer

as they do from cold in winter. The casing is made air-tight and the windows are closed in winter months, and the fowls have the advantage of the light but are protected from drafts. These back window sashes are not used in the 10x12 colony houses.

Ventilators in the front and rear. The ventilators in the front of these houses very much resemble the shutters ordinarily seen in the cupolas of barns. They are made of boards six inches in width and one-half to seven-eighths inches in thickness. The length varies according to the size of the house you build.

This shutter ventilator is absolutely fool-proof. It is in place, always admits the proper amount of ventilation and at the same time keeps the snow, rain or sleet from blowing in. A dry house is greatly to be desired. It often prevents colds, roup and kindred diseases. Should you have an entirely open front house, it is always more or less damp on the floor during the bad weather of the fall, winter, and spring months, the very time when the house should be perfectly

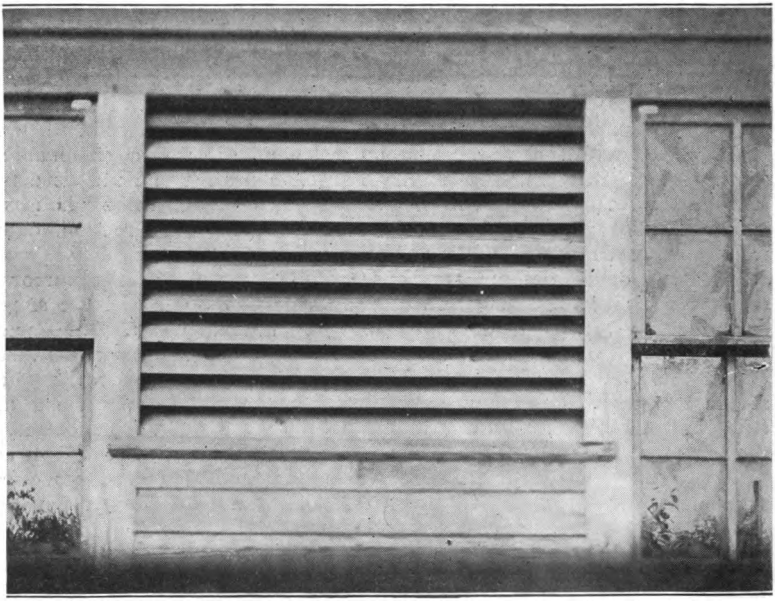


Fig. 5.—The shutter in the front of your house for ventilation and a window on each side of it for light and sunlight is about as near a perfect system as can be constructed. There is about an inch and a half space between each ventilator, and they are placed at an angle of about 45 degrees. A ventilator is made large enough to just fill this opening and may be hinged at top to open in and may be left open in dry, hot weather if preferred.

dry. These ventilators for the front of the house are made in a frame and hinged at the top to open inside. In extremely hot weather they may be opened up, allowing more fresh air to enter the house. If you are living in an extremely cold climate, you might tack a thin piece of cloth over the ventilators on the interior of the house during the coldest weather. After the coldest season is passed, if the cloth is used, it must be removed from the ventilator. It is not so much the cold we wish to avoid, but it is storms, dampness and drafts. Fowls prefer outdoor life. Before they were domesticated, chickens roosted in trees, and housing is really an artificial condition for them.

It is a serious mistake to try to heat poultry houses for laying and breeding stock. We must not entirely overlook the nature of the hen and compel her to live under too artificial conditions. We should make her comfortable and protect her from the storm. The objects we should have in mind are the health of the fowl and increased productiveness. The comfortable, happy hen is the profitable hen.

If you construct a "fool-proof" poultry house and use these shutters you do not need to worry about dampness or ventilation, providing other conditions are right. You will find that the fowls are stronger and hardier when housed in a well ventilated house. You don't need to worry about severe, dry cold weather being detrimental to your fowls in the interior of this house. All physicians recommend pure fresh air as the best treatment for many diseases in the human family. The prevention and cure of many diseases among poultry is also pure fresh air. This shutter ventilator, we think, is going to prove a blessing to the poultry fraternity and saves the labor of caring for curtains, etc.

In addition to this shutter ventilator in front we have a six-inch ventilator about eight feet long just under the eaves of the house on the rear side. This is opened in the hot months and aid in keeping the ceiling of the house cool and adds greatly to the comfort of the fowls. These ventilators in front and window sash and ventilator in the rear are the things which make the "fool-proof" poultry house far superior to many styles of houses. With this sysstem you can have just as much or just as little ventilation as desired, the house is always dry, is cool in summer, comfortable in winter, and being free from dampness and properly ventilated, the combs of the fowls gradually become hardened to the cold and do not freeze so quickly as in other styles of houses.

The doors. In the breeding house or laying house it is advisable to have doors in both ends. We recommend partitions fourteen feet apart. In a long breeding house separating different pens, it is also advisable to have light doors on swinging or double acting hinges, so the attendant may pass through from pen to pen without having to stop to fasten doors and latches. In the colony houses we have

only one door in the end, and prefer that in the east. All doors should be made wide enough to permit attendant to enter conveniently with pails or baskets. If outside doors are to remain open in summer months, always arrange for some method of fastening the door open. Don't allow it to swing loose and be broken from the hinges.

Roosts. The roosts in these houses are always located in the rear of the house. We use 2x2 material for roost poles and round the top edge a trifle. These are nailed to 2x6's, which rest on the droppings platform. (Fig. 6.) The rear roost is about twelve inches from the rear wall, and the roost poles are about fourteen inches apart. They are always built on the level, and never on a slant. When one roost is higher than the other, the hens will try for the top roost. They crowd this roost and cause one another to fall off and often bruise or injure themselves. Six to twelve inches of roosting space should be allowed to each bird, depending upon the breed. The roost can be raised and fastened to the roof as shown in Fig. 6, and the droppings easily cleaned from the platform. The roost poles need not be more than six or eight inches above the droppings board.

Broody coop. You should provide some method of breaking up the broody hen. If hens are allowed to stay on the nest after becom-

Fig. 6.—The roost raised and fastened with a screw hook and eye to the ceiling above. This permits the dropping board to be easily cleaned.

ing broody there is a loss in egg production. The broody coop shown here is a good method of breaking up hens from broodiness. Hens should be placed in these coops as soon as possible after you detect that they are inclined to sit. Hens should be well fed and watered while in the coop, so that they will soon begin to produce eggs again. Usually four to six days is long enough to keep the hens confined.

Droppings platform and ceiling. Sanitation is a very desirable thing in any poultry house, and it is impossible to feed your poultry under sanitary conditions if they are forced to scratch in litter and eat feed mixed with droppings. For this reason we think it is advisable to construct a perfectly tight droppings platform under the roost. If the back wall of the house is six feet high we place the droppings platform three feet from the floor. The roosts are six inches above that. This platform preserves the droppings, which is a valuable fertilizer, and it makes frequent cleaning a simple matter. With this system you may place your nests underneath and thus use this valua-

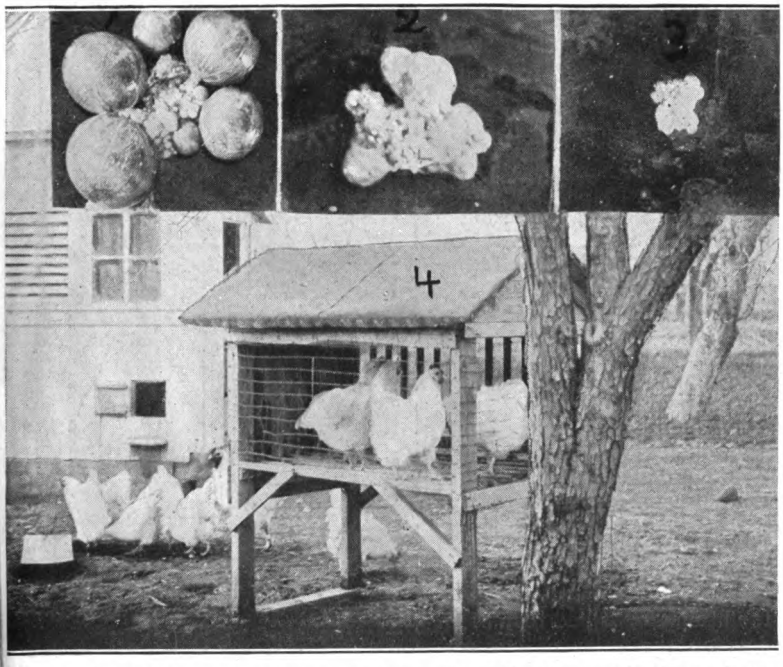


Fig. 7.—The broody coop should be placed in the shade of a tree in the yard near the poultry house. Above, the large yolk in the ovary of a hen when she becomes broody, and the small yolk after hen has been broody and set on eggs. To start hens laying, break them from brooding as quickly as possible.

ble space for that purpose (Fig. 8), and it leaves the wall space free for the use of bins, feed hoppers, drinking pans and other desirable equipment. Make the droppings platform out of light material and place the edges so they fit perfectly or else use tongue and groove lumber so that they are free from cracks. In a fourteen-foot house we build the droppings platform in three sections, so that it can be easily removed. Nail a cleat to the rear wall and use a 2x4 across the front of the droppings platform for the front and rear to rest on. The 2x4 drops into a groove made for it at each side of the house so that it can be removed.

Without a droppings platform our system of ventilation would not be complete. You could not safely have the window sash in the rear of the house below the droppings platform, neither could you have the ventilator under the eaves, for your fowls would be roosting in a draft. These are both very necessary for the best results. To avoid drafts where you use the ventilator and the window in the rear of the house remember that the droppings board protects the fowls from the draft from the window, and the back wall is ceiled and the rafters are also ceiled overhead to a point even with the front edge of the droppings board. Six-inch flooring is used for this purpose. This enables you to have all the ventilators open in summer, fresh air is always in circulation, but no draft.

The Arrangements of nests. The hens prefer to lay in some secluded spot. Don't put the nests down on the floor or out where it is too light. The hens see the soft shelled eggs and the broken eggs and they often develop the habit of egg-eating. The nests should be simple and constructed so that they may be easily removed.

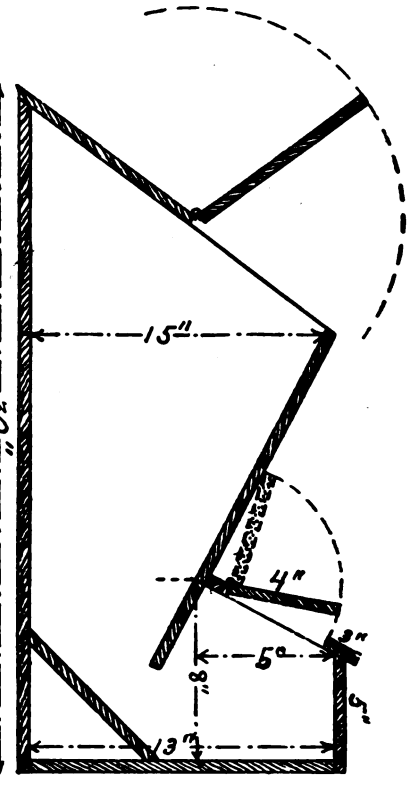


Fig. 8.—This shows a hopper for dry mash such as we use in our "fool-proof" poultry house. Build them any length desired. The exact dimensions of all parts of the hopper are shown.

We prefer to place the nests under the droppings platform. This is a convenient place and the nests do not occupy any of the valuable floor or wall space. Each nest should be not less than twelve inches wide and fourteen inches deep, and twelve to fifteen inches high.

The dry-mash hopper. This hopper is built out of lumber one-half inch in thickness, so that it will be light and easy to move about, but at the same time substantial. They are placed on a table two feet wide and eighteen inches high. The illustrations which are shown here give plans in detail for the hopper.

Many poultrymen, especially farmers, make the mistake of keeping no ground feed before their hens. Your hens will give much better results if you keep a dry mash in a hopper so that they may help themselves when they desire to eat.

Convenient homemade nests. You should have about one nest to every three or four hens. The nests should be deep enough to prevent the eggs from rolling out. We build these nests in units of two. When they are built in pairs, they are easily handled by anyone.

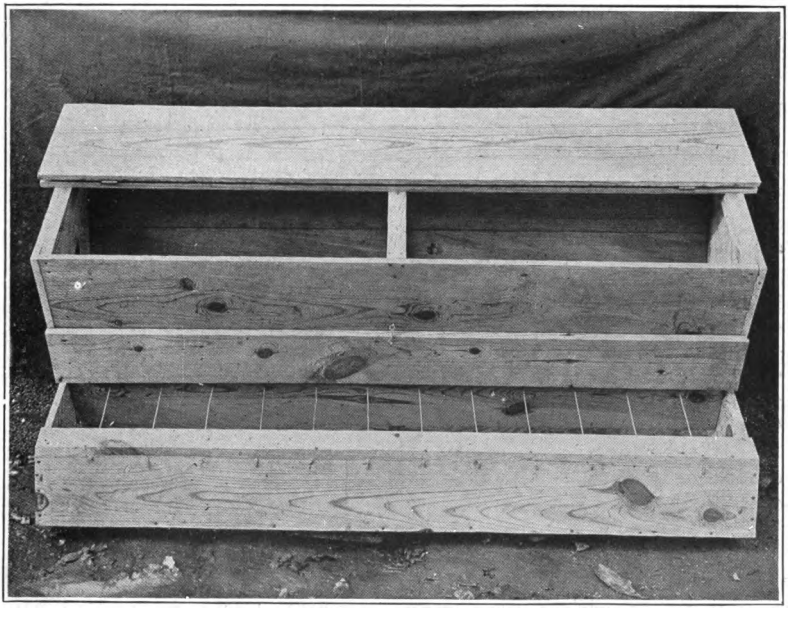


Fig. 9.—A dry-mash hopper four and one-half feet long which holds over 150 pounds of dry mash. The opening through which the fowls eat should be four inches in the clear. Wires are placed across this opening three inches apart to prevent the birds from getting in and also prevent them from wasting the mash. This shows the top door open ready for filling.

You can use light boards on top if desired, or if your nests are to go along the wall you can put a slanting top on the nest so the hens will have no place to stand or roost. The best place, however, for the nest is under the droppings board. We build the nests about fourteen inches square and this gives room for ten nests under the dropping board in a fourteen-foot house. Keep the nests clean and remove the nesting material whenever necessary. These nests when not wanted as trap nests make excellent open nests. Simply fasten the door up or remove door from the nest. This can be easily replaced when desired to be used as a trapnest.

Feed bins. Handy devices which save steps and labor are among the most important essentials to profitable poultry keeping. No poultry house really is complete which does not provide for storing sufficient grain to last a week or more. Fig. 16 shows the grain box which is built just beneath the ventilator in the "fool-proof" house illustrated and described in this bulletin. This box should be built in proportion to the size of the house you are building. Note that the top is made slanting so that the fowls cannot roost on it. This grain box is not only a saving of steps and labor but renders to keep an account with the flock, since one hundred pounds of grain or more can be weighed out and charged to them at a time. A cup or measure should be kept in each box.

Partitions. Where a house is intended for breeding purposes and poultry is to be yarded in front of the building, it is necessary to have partitions in the house to separate the different pens. If the house is to be used for a large flock of laying hens it will save much labor in caring for the birds and giving each fowl a larger space to exercise if the partitions are sixteen feet long in a twenty-foot house, extending beyond the roosting quarters. This leaves a space of four feet for the birds and the attendant to use as a passage way, free from any obstruction or doors from one end of the house to the other. These partitions are intended only for the purpose of preventing drafts in the house and to protect the fowls while on the roosts. The partitions should be solid, at least ten feet from the rear wall, and the front portion may be of poultry netting. Have two feet of solid board below the wire to prevent male birds from fighting. The door or openings in all partitions should be placed exactly opposite each other. The board partitions should be every fourteen feet in the breeding or farmers house, and every twenty feet in the long laying house.

Exits. There should be two exits to each section of the house. All exits should be about 10x12 inches in size and should be at least six inches from the floor to prevent the litter from being scratched from the floor into the yards. It is a good idea to put a board on a bracket on the exterior of the house just below the exits. This gives the fowls something to fly upon before entering the house.

Convenient Arrangement or interior. We have made recommendations as to what we think is a splendid arrangement for the interior of your poultry house. But conditions vary with different poultrymen and farmers and we urge you to use your own judgment in arranging hoppers, drinking pans, bins, etc. Do not overlook the comfort of your fowls and your own convenience, so as to save labor in caring for the poultry.

The drinking pan. The drinking pan should be placed on a table built for that purpose, about eighteen inches from the floor. In good weather it is best to have the pan located in some shady spot in the yard. The object you should have in mind is to protect the drinking pan from filth and trash. The pan should be protected so the fowls cannot get into it with their feet or easily turn it over, and still be easy of access. Pure water is as essential as pure food.

The litter. Clean straw, free from mold, should be placed on the floor of the poultry house. We prefer a straw litter four to six inches deep over the floor of the house. Part of the grain can be thrown into this and the fowls compelled to work for a part of their feed. Thus on bad wintry days the hens may be confined to the house and be kept busy, contented and happy. By all means see that the litter is clean and free from must and mold.

Shade. Fruit trees, such as cherries or apples, make suitable shade for poultry yards. Fowls often suffer greatly in summer months from the heat, and every poultry yard should have shade. The shade should not be so dense that it keeps all the sunlight from the yards. A few trees are all that is really necessary. Poultry fertilizes the soil and also aids in keeping down injurious insects. Some allow grape vines to grow along poultry fence. Sunflowers or corn grown in the poultry yard make an excellent shade. If you can provide shade in no other way, drive down some stakes and cover a frame with burlap or brush.

Fences. A height of about five or six feet is sufficient for any poultry fence. If you are troubled with fowls flying over, clip about half of the long wing feathers of one wing only. If you will leave the half of the wing feathers next to the body uncut, it will be impossible for the bird to fly very satisfactorily, and this permits it to fold the clipped portion of the wing under and does not injure the appearance of the fowl. Don't clip the wing of any bird which you are intending to exhibit. We don't like the use of fine two-inch-mesh wire for poultry fences. Most wire manufacturers make a heavier poultry fencing, much like a stock fence, only lighter and smaller mesh, and a fence which will last and retain its shape better. Avoid

By using a window in the rear of your house you can divide your yards the long way and let your poultry pass out through this window and use the north yard in summer and the south yard in winter. By alternating the yards in this manner you can cultivate one while the poultry is using the other.

all the fencing you possibly can in equipping your poultry plant, as fencing is very expensive.

Cultivation of yards and crops to grow. Yards if not sodded should be cultivated if the soil is to be kept sweet and fresh. While the yards are being cultivated, you should grow some green food for the poultry. Cultivation of the yards also gives the fowls more exercise, as well as cleanses the yards. The crops use up the manure and help to prevent the spreading of disease. Such crops as wheat, oats, rye, corn, clover, vetch, rape, or soy beans may be grown. All of these are very good and some of them should be sown with each cultivation. You should never try to raise or keep poultry on bare yards.

System of yarding. If your poultry is to do well where they are confined to small quarters and kept yarded year after year, it is necessary that you provide some method of furnishing them fresh soil on which to run for at least a portion of the time. Poultry cannot do well and will sooner or later lose its vitality if confined to small quarters and bare yards continuously.

The breeding stock produces more fertile eggs, which hatch more vigorous chicks, where they have plenty of free range. Poultry can be raised successfully for an indefinite period if a double yarding system is used.

The farmers' "fool-proof" poultry house. Having discussed the general principles of poultry housing, we come now to the practical application of these principles. There are three types or styles of houses which are in general use. They are as follows: A house for the farm flock; the laying house for a large number of hens kept for commercial egg production; the colony or brooder house which can be used both for growing stock, or small breeding pen. All of these houses can and should be built along the same general line, same kind of material, style of roof, system of ventilation, etc., except in the colony brooder house, where windows in the rear are not used.

Let us first consider in detail a house suitable for the ordinary farm flock.

Housing has considerable to do with the health and vigor of the breeding stock, with the number of eggs laid and the fertility of the egg. If a farmer is to get the best results from his poultry, he must have them comfortably housed. If kept painted, a house like this will give many years of service, and the increased egg production and the improvement in the health of the fowls will soon pay for the cost. Your poultry will prove a pleasure to you.

When you have your flock housed in a single house, by having an exit on each side of the house, you can divide your yard into two parts and allow the birds the use of one yard while you are cultivating and growing some green feed in the other. Alternate your pens in this way and always keep the other yard sown, which will furnish the birds feed at all times.

This house is twenty-eight feet long, fourteen feet wide, eight feet high in the front and six feet high in the rear. It will comfortably house from 100 to 125 hens. Foundation and floor are of concrete, floor being six to eight inches above the level of the outside ground. Distance between end and center windows is nine feet. Center windows are two feet apart. Windows are placed as high up as possible in order that the sun may shine far into the house as possible in the winter months. Each four-pane sash measures 29x31 inches the panes measure 12x14 inches. Upper sashes are hinged at the top and swing outward. Lower sashes are fastened by means of a stop-pin in near the top of the sash, allowing it to be pushed out at the bottom the same as the top sash. This provides more ventilation. They may be closed on windy days to prevent too much wind blowing in the house. Each ventilator is three feet square. Slats in the ventilators are 1x6's at an angle of about forty-five degrees. Distance between slats is about one and one-half inches. Exits for chickens beneath each window in front are 12x12 inches. Siding may be either drop-siding or ship-lap—any tongued and grooved material.

Note the long, narrow ventilators just beneath the eaves, hinged at the top and swinging outward. They are for ventilating purposes in hot weather and kept open only in summer. The four windows shown in rear (Fig. 1) are all hinged at the top, swinging outward. They admit light on to the scratching floor in winter and increase ventilation in summer. We find these windows to be very beneficial, especially on cloudy days.

In winter these must be closed and made air-tight. Bottom of windows are six inches above floor. Each sash measures 24x26 inches, the panes measuring 10x12 inches. Roof is sheeted and covered with two or three-ply prepared roofing, all joints and seams being rendered air-tight with waterproof tar paint.

The cross section of interior. The building is divided into two equal parts by a solid board partition running from floor to roof and coming within four feet of the front, thus preventing drafts. Droppings platform is four feet wide and three feet above the floor. Boards in droppings platform run crosswise to facilitate cleaning. Note ceiling above and back of roosts and down even with droppings platform. Six-inch flooring may be used for both droppings platform and ceiling. Roosts are 2x2's rounded off at the top and nailed to the 2x6's. The 2x6's merely set on droppings platform and are easily and quickly removed, or may be raised up and hooked to ceiling while cleaning off the droppings platform. Nests are set on a shelf supported by brackets just beneath the droppings platform. Those shown in illustration are home-made nests. Water pan and feed hopper are both set on table eighteen inches above the floor and should be about two feet wide, so that the litter cannot be scratched into the watering pan, and that the entire floor is left

BILL OF MATERIAL FOR A FARMER'S FOOL-PROOF POULTRY HOUSE 14 FEET WIDE, 28 FEET LONG, 8 FEET HIGH IN FRONT, 6 FEET IN BACK.

No.	Name.	No. of pieces.	Sizes.	Length.	Kind of material.	How used, etc.	No. Ft. per piece.	Total Sq. Ft.
2	Front sills	2	2x4	14	Pine		9⅓	18⅔
2	Back sills	2	2x4	14	Pine		9⅓	18⅔
2	End sills, 1 for each end	2	2x4	14	Pine		9⅓	18⅔
2	Front plates	2	2x4	14	Pine		9⅓	18⅔
2	Back plates	2	2x4	14	Pine		9⅓	18⅔
13	Front studding	7	2x4	16	Pine	Cut 7 ft. 8¾ in	10⅔	74⅔
6	Cripples	2	2x4	14	Pine	To cut for short studding	9⅓	18⅔
13	Back studding	7	2x4	12	Pine	Cut 5 ft. 8¾ in	8	56
8	End studding, 4 for each end	4	2x4	14	Pine	Cut to fit rafters	9⅓	37⅓
4	Partition studding	2	2x4	14	Pine	Same as above	9⅓	18⅔
15	Rafters	15	2x4	16	Pine	Cut to fit plate	10⅔	160
2	Outside door headers	....	....	..	Pine	Cut from left-overs	....	.....
2	Center supports	2	2x6	14	Pine		14	28
2	Posts for same	1	2x4	16	Pine	Cut to fit center support	10⅔	10⅔
4	Droppings board supports	4	2x4	14	Pine		9⅓	37⅓
7	Siding lengths, front	14	1x6	14	Pine	Front siding (drop)	7	98
14	Siding lengths, front	6	1x6	12	Pine	Front side (drop)	6	36
98	Siding lengths, front	14	1x6	14	Pine	Front side (drop)	7	98
38	Siding lengths, each end	38	1x6	14	Pine	End siding (drop)	7	266
14	Siding lengths, back	28	1x6	14	Pine	Back siding (drop)	7	196
2	Back ventilator boards	2	1x8	14	Pine	Ship-lap	9⅓	18⅔
38	Inside lining lengths	38	1x6	14	Pine	Flooring	7	266
38	Roof sheathing	38	1x10	14	Pine	Common No. 2 boards	13⅓	506⅔
1	Rubberoid roof, 6½ squares	...	....	..	Pine		....	.....
2	Outside door frames	2	1x6	16	Pine	Cuts jambs and headers	8	116
2	Outside door casing complete	2	1x4	16	Pine	Cuts side and head	5⅓	10⅔
2	Outside door sills	1	2x8	8	Pine	Cuts both sills	10⅔	10⅔
4	Front window frames	4	1x6	14	Pine	Cuts jambs and headers	7	28
4	Front window sills	1	2x8	12	Pine	Cuts 4 sills	16	16
4	Front window casing	4	1x4	14	Pine	Cuts sides and head	4⅔	18⅔
4	Back window frames	4	1x6	16	Pine	Cuts jambs, header and sill	8	32
4	Back window casing	4	1x4	16	Pine	Cuts sides, header and sill	5⅓	21⅓
4	Front ventilator frames	4	1x6	12	Pine	Cuts jambs, header and sill	6	24
4	Front ventilator casing	4	1x4	10	Pine	Cuts sides and heads	3⅓	13⅓
44	Front ventilator slats	11	½x4	12	Pine	Cuts 2 ft. 10 in	4	44
2	End doors of flooring	6	1x6	12	Pine	Cuts 6 ft.	6⅓	36
1	Facing all around	6	1x4	16	Pine		5⅓	32
1	Partition	7	1x6	14	Pine	To be cut to fit	7	49
1	Partition door	1	1x4	16	Pine	Cover frame with wire	5⅓	5⅓
8	Corner boards	4	1x4	14	Pine	2 boards for each corner	4⅔	18⅔
8	Roost-pole supports	3	2x6	14	Pine	Cuts 4 ft. 6 in	7	21
16	Roost-poles	4	2x2	14	Pine	Cuts 6 ft. 10 in	4⅔	18⅔

4 full windows—8 light, 12x14 glass (front windows). 4 full windows—8 light, 10x12 glass (back half windows.) 15 lbs. 16d common nails. 75 lbs. 8d common nails. 10 lbs. 6d common nails. 10 lbs. 8d finish nails. 5 lbs. 6d finish nails. 2 lbs. 3d common nails. 2 pairs 5-in. T-hinges for main doors 2 hooks and staples for same. 3 pair wrought butts 2x2 for back ventilator. 4 pair wrought buttes 2x2 for small doors. 4 pair wrought butts 2½x2 for top sash. 8 spring window bolts for lower sash. 1 pair double swing hinges for partition door. 30 feet poultry netting. 1 in. mesh, 28-in. wide four windows. 1½ dozen hooks and eyes.

free for scratching purposes. This makes a rtaher inexpensive house and convenient for a flock on a farm or city lot. We would recommend that this house be built in single sections, 10, 12 or 14 feet square, for the city lot. For farm use, build it in sections, 14, 16, 20 feet square, and build one or as many sections as you need to accommodate your flock. Avoid all unnecessary fencing and give your flock all the free range possible.

The "fool-proof" laying house. The mistake often made on many commercial egg farms is that of keeping too few laying hens in one flock, thereby greatly increasing the expense of caring for the fowls. Labor is one of the most important items which must be taken into consideration if commercial farms are to be made profitable. Many large poultry farms have failed because of amount of labor required in caring for the birds, feeding, watering, cleaning houses, gathering eggs, opening many doors and gates, and the expense of keeping up numerous fences, etc. With such systems in use, it is doubtful whether many poultry farms would succeed. With the "fool-proof" laying house and the system here recommended can care for 2,000 or more laying hens. This house is intended only for use where fowls are kept in large flocks and where they can be given plenty of range.

The "fool-proof" laying house described here is one hundred feet long and twenty feet wide, eight feet high in the front and six feet high in the rear. The arrangement of the windows and ventilators is the same as in the "fool-proof" breeding house, except that each section is twenty feet long instead of fourteen feet. On the interior of the house a solid board partition extends from the back wall to within four feet of the front. This leaves a space of four feet between the partition and the front wall, which is always open, thereby giving each hen access to a house 100x20 feet. This gives each hen more room and insures more exercise. By not having any doors to open, by having the feed stored in the house in bins and hoppers in liberal quantities, and by having the water, if possible, piped into the house, the attendant can easily care for a large number of hens. You can easily house from 500 to 600 Leghorn hens in this 100x20 "fool-proof" laying house, or 500 of the larger breeds. Sixteen-foot solid partitions must be used to every twenty-foot section, leaving a space of four feet free from doors or any obstruction.

We do not recommend that more than 500 or 600 hens be kept in one house. If you desire to keep 2,000 laying hens, then build four of these houses, and if to be enclosed by fences, allow about five acres of ground to each house. More is to be preferred. If the houses are placed at a reasonable distance apart, the flocks will not mix, even though you have no fencing.

Sixteen-foot square "fool-proof" poultry house. We show here a photo of a 16x16-foot poultry house with an addition of two windows underneath the ventilator in front, which adds to the light and cheer-

fulness of the house and admits sunlight on the floor in the center of the house. These windows are the same as used in the other fronts in the "fool-proof" house. Two sashes, four-glass each, 12x14 windows, put in lengthwise. In this house the feed bin is placed in the end of the house. Note that the shutter front ventilator is swung on hinges and made to open in to admit more sunlight and fresh air when needed. This makes a nice-sized house for a farm flock and will house sixty-five hens of the all-purpose breeds and will house ninety to one hundred Leghorns, where you have free range for them.

The "fool-proof" colony house. Every poultry farm and every farmer should have one or more of these small colony houses. They are built twelve feet long, ten feet deep, eight feet high in front and six feet high in the rear. The arrangements of windows and ventilators is the same as in the larger "fool-proof" breeding houses, except that each is smaller in size and there is no window in the rear of this house. We use a six-inch ventilator underneath the eaves.

After the chicks are old enough to do without heat, we remove the stove from the house and store it away, putting in temporary roosts. This house is then occupied by the chicks until they are fully matured. Twenty to thirty pullets or twenty laying hens can be kept in one of these houses in the winter months. For next season's brooding the roosts are removed and the stoves replaced.

Thus the "fool-proof" colony house can be used the year around. We know of no better method of raising incubator chicks than that herein described. Most any farmer or farm hand who can use a hammer and saw can build one of these houses in a short while. You will find them a great convenience. It is the general opinion of those who have tried these "fool-proof" houses that there is no better proportioned, better ventilated, or more satisfactory colony house in existence than the Missouri State Poultry Experiment Station's "fool-proof" houses.

When first placing the baby chicks under the hover in this house, we confine them to the house for two or three days, or longer if necessary, until the chicks learn to eat and drink and know the way to and from the hover. We also cover the floor with a fine straw litter or clover chaff and sprinkle a little sand or grit upon the floor. When we decide to let them outside, we drive down a few stakes and place a strip of one or two-foot poultry netting, one-inch mesh, around a space in front of the house. This gives them a little yard to use for a few days only until they learn the way in and out of the house. Then the little temporary fence is raised at the bottom and the chicks have free range and come back here to roost at night and for protection from storms. This temporary fence can be let down on rainy days or threatening weather, keeping the chicks close to the house, where they can be driven into the house in a short time in case of a storm.

There is no better place to keep a few of these houses than in a cornfield near the orchard or garden. The corn furnishes plenty of shade and the poultry find lots of bugs and worms, besides having clean, fresh ground over which to run. The young stock in a cornfield grows strong, husky and vigorous. You can put a luster on their plumage and get a growth here that you can get in no other way. One or more "fool-proof" colony houses will prove a good investment for any poultry raiser or farmer.

The two-section brooder house. We show here another type of colony brooder house which has given good satisfaction. It is an inexpensive house having a partition in the center of room, allowing the chicks to go into a room for exercise and feeding, by means of an opening at the floor in the center partition. This room is not so warm and this is very good that the chicks may become accustomed to a lower temperature before being let outside. This house is 10x14 feet, six feet high in rear, eight feet high in front, framed with 2x4's. Floor should be made tight with tongue and groove flooring. Windows and cloth curtains are both hinged at top, and openings covered with one-inch poultry netting.

BILL OF MATERIALS FOR FOOL-PROOF LAYING HOUSE.

20 feet wide by 100 feet long.

No.	Name	No. of pieces.	Sizes.	Length.	Kind of material.	No. Ft. per piece.	Sq. Ft.
2	End sills	2	2x6	20	Pine...One for each end	20	40
2	Side sills	10	2x6	20	Pine...5 for each side	20	200
37	Front studding	19	2x4	18	Pine...For long studding, 1 piece cuts 2	12	228
10	Front studding	5	2x4	12	Pine...For short studding, 1 piece cuts 2	8	40
50	Back studding	25	2x4	12	Pine...Total studding for back	8	200
18	End studding	9	2x4	16	Pine...For both ends, 1 piece cuts 2	10⅔	96
50	Rafters	50	2x6	22	Pine...Cut to fit plates	22	1 100
2	Double plates	25	2x4	16	Pine...For front and back plates	10⅔	266⅔
1	Roof support	5	2x8	20	Pine...To support the rafters	26⅔	133⅓
5	Beam supports	5	4x4	10	Pine...Cut to fit under above roof support	13⅓	66⅔
20	Partition studs	10	2x4	16	Pine...1 piece cuts 2, cut to fit rafters	10⅔	103⅓
5	Droppings boards supports	1	2x4	14	Pine...1 piece cuts 5, cut to fit rafters	9⅓	9⅓
5	Siding boards, "full'	30	1x6	14	Pine...Drop siding, No. 1 cut under windows 5 boards	210	250
	Siding boards, "full'	5	1x6	16	Pine... high, drop siding	40	
7	Siding boards	35	1x6	12	No. 1..Cut under ventilator, 7 boards high, drop siding	6	210
80	Siding boards, short	20	1x6	12	No. 1..Cut between ventilators and windows	6	120
14	Siding boards, long, back	84	1x6	16	No. 1..Sides up the entire back side	8	672
54	Siding boards, both ends	54	1x6	14	No. 1..1½ pieces to the run	7	378
2	Flooring board doors	6	1x6	12	No. 1..Flooring cut 6 ft	6	36
10	Window frames	10	1x6	14	No. 1..Finish 1 piece cuts, jambs and heads	7	70
10	Window sills	7	2x8	14	No. 1..Cut sills for windows and ventilators	18⅔	130⅔
10	Ventilator frames	10	1x6	10	No. 1..Cuts jambs and head jambs	5	50
140	Ventilator slats	35	½x4	10	No. 1..1 cuts 4 pieces	3½	116⅔
162	Roof boards	162	1x10	14	Pine...Cut to fit, 6 boards to 1 run, 27 runs	11⅔	1 890
27	Roof boards	27	1x10	16	Pine...Cut to fit, 1 board to 1 run, 27 runs	13½	360
1	Facia complete	11	1x4	14	Pine...To be cut to fit	4⅔	51⅓
10	Window casing	10	1x4	14	Pine...1 piece cuts all casing for each window	4⅔	46⅔
10	Ventilator casing	10	1x4	12	Pine...1 piece cuts all casing for each ventilator	4⅔	46⅔
22½	Squares rubberoid	...	....	..	.....	.....	.....
10	Supports for dropping boards	10	2x4	20	Pine...Cut 20 feet to fit between partitions	13⅓	133⅓
10	Windows, 12 light	...	....	..	.....10x16 glass measure	.....	.....
10	Half windows or sash	...	....	..	.....4 lights to each sash, 12x14 glass measure	.....	.....
10	Frames for above	5	1x6	12	Pine...Cut all jambs except sill, sills given above	6	60
20	Cleats for droppings boards	20	1x3	10	Pine...	2½	50
110	Droppings boards	55	½x10	12	Pine...Cuts six (6) feet long	8⅓	458⅓
20	Roost supports	10	2x6	10	Pine...Cut 5 ft. long	10	100
40	Roost poles	20	2x2	16	Pine...Cut 8 ft. long	5⅓	106⅔
5	Broody coop frames	10	2x2	16	Pine...Cut 2 pieces to each frame	5⅓	53⅓
80	Partition boards	80	1x6	16	Pine...Sheathing No. 2	8	640
8	Corner boards	4	1x4	16	Pine...Each piece cuts 1 corner board	5⅓	21⅓
130	Lining boards	130	1x6	16	Pine...At the back and over the roosts	8	40

50 lbs. 16d common nails. 125 lbs. 8d common nails. 20 lbs. 8d casing nails. 15 lbs. 6d casing nails. 10 lbs. 3d common nails. 10 lbs. wire staples. 4 pair 1½x1½-in. wrought butts, small doors. 2 pair 4-in. T-hinges, for entrance doors. 10 pair 1½x2-in. wrought butts, for windows. 8 pair 2x2-in. wrought butts, for ventilators in back. 30 spring window bolts, for windows. 24 hook and eyes, 2-in. long, for all openings. 2 door clasps, 6-in., for main doors.

The Farmers' Poultry House

Designed by The College of Agriculture, University of Missouri.
By H. L. Kempster.

Location of the house. In selecting a location for a poultry house the farmer usually chooses the one which is nearest to his home in order that the house-wife may conveniently care for the poultry flock. This accounts for the usual location of the poultry house half way between the house and the barn where it is convenient for the hens to overrun not only the farm buildings, but also the kitchen porch. This habit is also encouraged by the indiscriminate scattering of feed, often closer to the farm buildings than to the poultry house. If the farm poultry house is located so as to make it natural for the hens not to run in the yards, there will be very little trouble with them overrunning the farm buildings.

In the care of poultry one should aim as far as possible to feed all the feed in and around the poultry house. Frequently poultry can be encouraged to run into the orchard by a simple arrangement of the fences. Grain crops can often be grown upon the same ground upon which the poultry flock is running with very little injury to the crop. Corn is especially adapted to such a practice. This practice furnishes an abundance of shade during the summer when it is most needed. The yards are plowed occasionally, exposing the soil to the sun, destroying many disease germs and intestinal parasites, and the droppings which are generally wasted are utilized. In addition to making conditions more healthful, this growing of crops on the poultry runs also reduces the feed cost. Under Missouri conditions it is more desirable for chickens to be kept upon cultivated soil than it is to attempt to have a permanent sod run. Often the garden can be alternated with the poultry pasture. Under farm conditions this kind of yarding can be easily arranged with practically no fencing. While the location of the farm poultry house is generally determined by the convenience with which it can be reached from the house, a little forethought will enable the poultry keeper to make the above arrangements without sacrificing convenience.

The open front poultry house. The open front or fresh air house is exceedingly popular. This house is generally 14 feet to 24 feet square. The open front type is best adapted where the house is to be nearly square and should in no case be used on a house less than 14 feet deep. Houses 18 to 20 feet deep are better.

This house is 3½ feet high in front and 5 feet high in the rear. The roof is of unequal spans, the longer being twice the length of

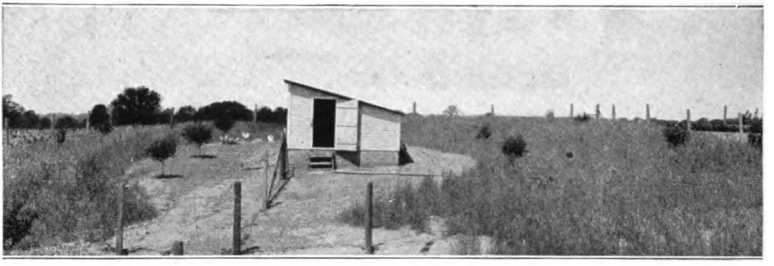


Fig. 1.—Grain crops on same ground with poultry house.

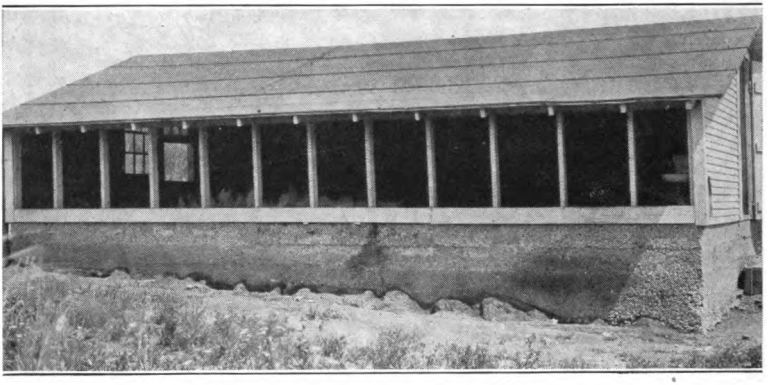


Fig. 2.—The open-front type of poultry house.

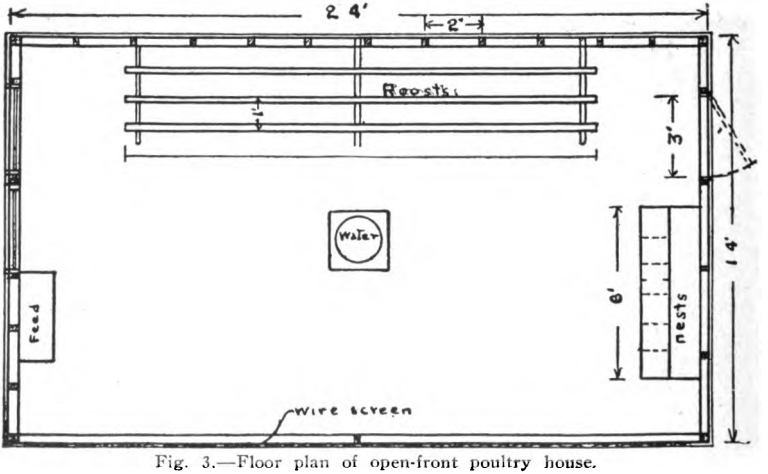


Fig. 3.—Floor plan of open-front poultry house.

the shorter. Such a type is known as the combination roof. In open front houses the long span is on the south side. The pitch of the roof is one-sixth, i.e., having a one foot rise to every three feet horizontal run. The south side is covered with wire screen. Two 12-light, 9 by 12-inch pane windows are placed in the west end. There is a door in the east end. The north side, the ends, and roof are absolutely tight. This is essential for the success of the open front house. The roosts are placed at the back of the house where they are away from drafts, as air currents will extend in only about half of the width of the house. Snows or rains will drive in but a short distance.

This house is very satisfactory for farm use. It requires practically no labor to care for the ventilation. It adjusts itself to temperature changes without constant attention. The low front necessitates windows in the west end. These windows make the house very light, and enable the sun to touch practically all portions. In summer the windows may be removed, and by opening the door at the east end there is a perfect circulation of air. This feature makes the house equally good for summer use. For farm use a house 20 feet square with the same measurement for front and back as given

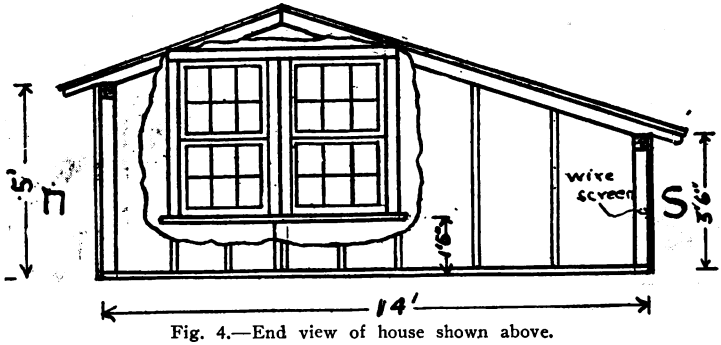


Fig. 4.—End view of house shown above.

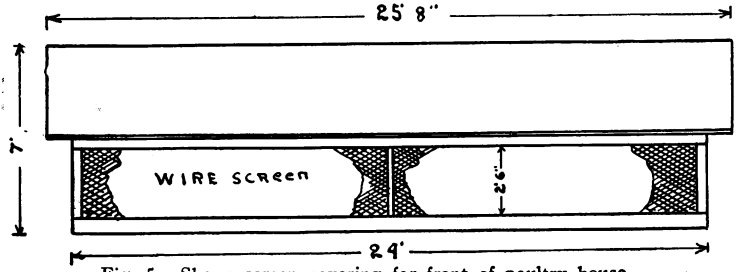


Fig. 5.—Shows screen covering for front of poultry house.

above, is very satisfactory. A house of this size will accommodate about one hundred laying hens.

Figure 6 shows the arrangement of the interior. The nests are one foot square and are placed underneath the droppings platform. They are comparatively easy to construct: 12-inch boards are cut into 14-inch lengths; these are set on end every 13 inches, and 1 by 4-inch strips are nailed along the lower edges. 1 by 2-inch strips are nailed along the upper edges. Between these strips on the outside an 8-inch door is placed. The bottom is covered with wire screening which causes all the dirt and dust to drop to the floor. A board is placed along the back for the hen to run along to find her nest. As many nests as desired can be built to a section. They are easy to clean and furnish seclusion, which lessens the amount of egg eating.

The roosts should be at least 2 inches in diameter, and should be placed level and firm. Their height from the floor can vary all the

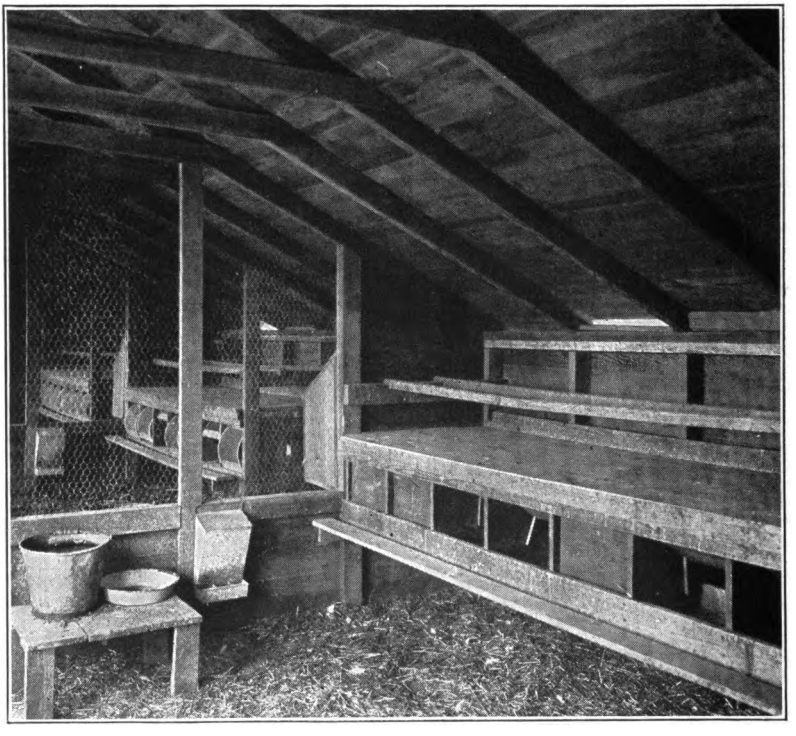


Fig. 6.—This arrangement of interior is convenient and sanitary.

way from 3 to 5 feet. They should be placed at least 14 inches from the wall, 12 inches apart, and low enough that the heads of the birds are 14 inches from the roof. From 8 inches to 14 inches of roosting space should be allowed for each bird.

The house is placed upon a concrete foundation. The manner in which the sill is bolted to the foundation is illustrated in Figure 7. In this house a dirt floor is used. It is dry at all times, the dryness being afforded by having the floor higher than the ground level, and by making a 3-inch fill of cinders or gravel which is covered with clay so that the loose soil will not work down between the coarse material. The clay is covered with 2 or 3 inches of soil. The chief disadvantage of a dirt floor comes from the possibility of rat invasions, and from the necessity once a year to remove the foul dirt and replace with fresh. On a dirt floor the straw which is used on the floor for scratching litter becomes dirty much quicker than when a concrete floor is used.

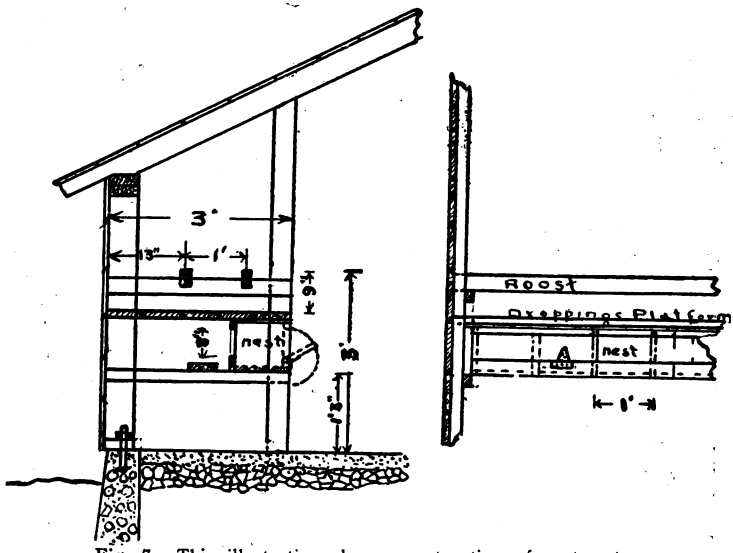


Fig. 7.—This illustration shows construction of nests, etc.

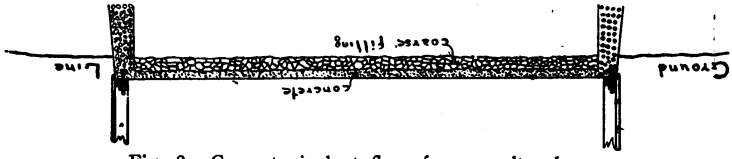


Fig. 8.—Concrete is best floor for a poultry house.

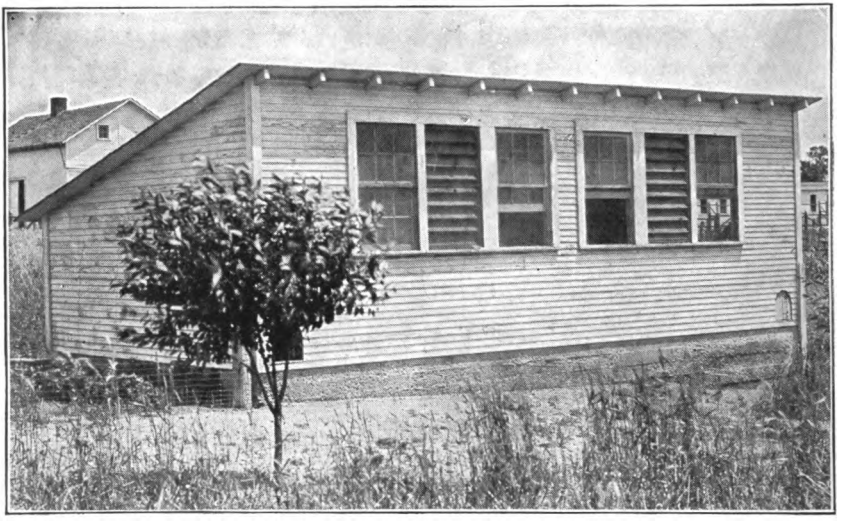


Fig. 9.—Shutters—a new type of ventilation that is proving successful.

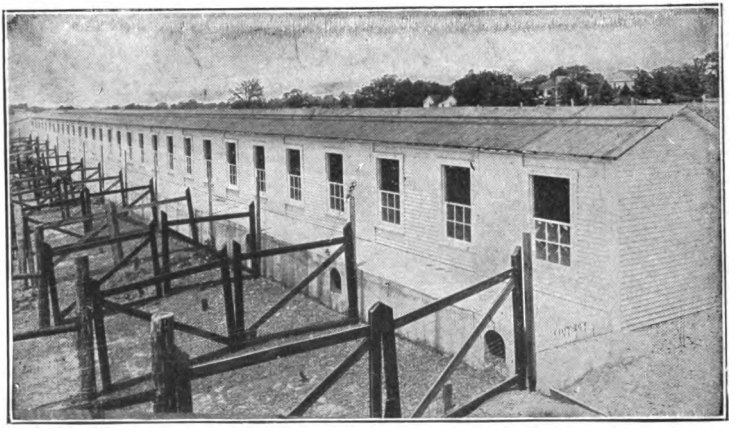


Fig. 10.—Top half of windows show muslin removed in summer.

Farmers' shutter front poultry house. This house is 14 by 24 feet; it is 4½ feet high in the back and 8 feet high in front. The greater height in front is required by the shed type of roof which is used. This type of roof is most economical when the house is not more than 14 feet deep. Other types of roof construction would be more satisfactory on deeper houses.

Four 12-light windows with 8 by 10-inch panes are placed in the front of the house which is supposed to face south. Two shutters similar to those used in the cupolas of barns, each 2½ feet wide and 3 feet high, are placed on the south side to afford ventilation. The shutter front type of ventilation has an advantage over the open front in that it can be used on houses with their high side to the south and no rain can beat into the house. This house has a partition so that two flocks can be separated, an excellent convenience during the breeding season when one wishes to select the best birds to use as breeders. The remainder of the equipment is the same as that described for the open front house.

The muslin front poultry house. Figures 11, 12, and 13 show another type of house adapted to farm conditions. This is known as the muslin front house. It is 14 feet deep, 24 feet long, 4½ feet high at the back and 6½ feet high in front. It has a combination type roof which is adapted to the construction of wide houses.

Ventilation is secured by the use of muslin frames. The muslin front house permits the air to work through the cloth and yet keeps the chickens out of the draft. Muslin for ventilation is efficient as long as it remains dry. If it becomes wet it retards the movement of the air. Even when muslin frames are used they should be open

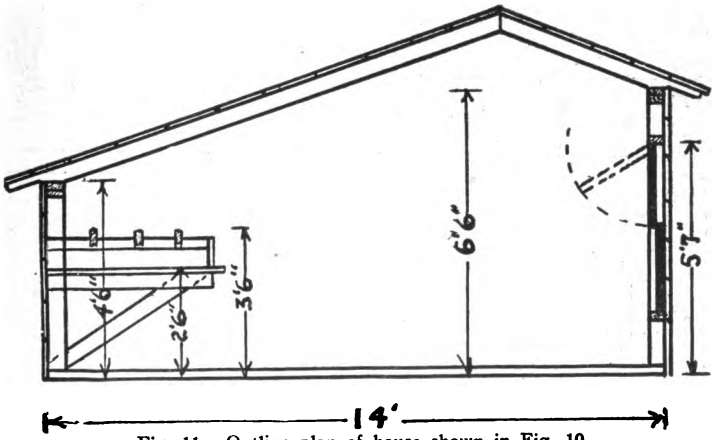


Fig. 11.—Outline plan of house shown in Fig. 10.

daily so as to air out the house. Four 6-light windows with 8 by 10-inch panes are also used on the south side, the glass forming the lower half of the window and the muslin frames the upper.

Poor ventilation is indicated by damp floor, tough litter, moisture on the windows and walls and a characteristic close odor. Where these conditions exist not enough ventilation is provided. Either the house must be kept open more, or more muslin must be used. Dampness must be avoided. Frozen combs are usually caused by a damp poultry house or a quick change in temperature. A low temperature with dry air is not so distastrous as a high temperature with the air moist. A large portion of the liquid excreta of fowls is given off through the lungs. This emphasizes the importance of ventilation.

Portable colony house. Figures 14 and 15 shows a portable colony house which can be used for brooding little chicks in the spring, for

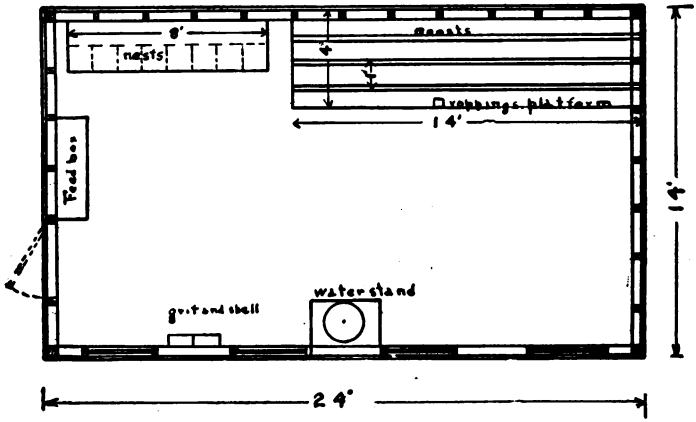


Fig. 12.—Floor plan of muslin front house.

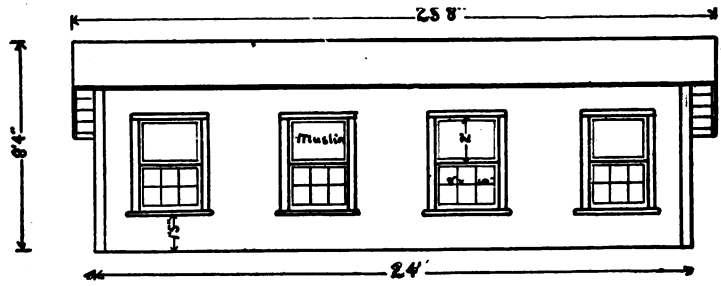


Fig. 13.—Front view of "muslin front" poultry house.

housing growing stock in the summer, and for mature stock during the winter. This house is 8 feet deep by 12 feet long. By placing it on runners it can be removed. Every farmer ought to raise his chickens by means of portable houses. This enables him to change his brooding yard from season to season and also permits him to move his chickens to the edge of a corn field as soon as they are large enough to roost. Where chickens are range-raised in this way the farm lanes, corn fields, wheat fields after the grain has been removed, etc., can be utilized. Here the shade, green food, bugs, worms, grasshoppers, etc., furnish conditions conducive to a rapid healthful growth. A house of this kind enables the farmer to separate his young stock from the old, for, when the two are raised in the same yard, conditions are insanitary and the young stock suffers because of being overrun.

At the University of Missouri chicks are brooded in these houses by means of portable hovers. Heat is removed as soon as possible and the chicks are kept i the same house until they are put into winter quarters.

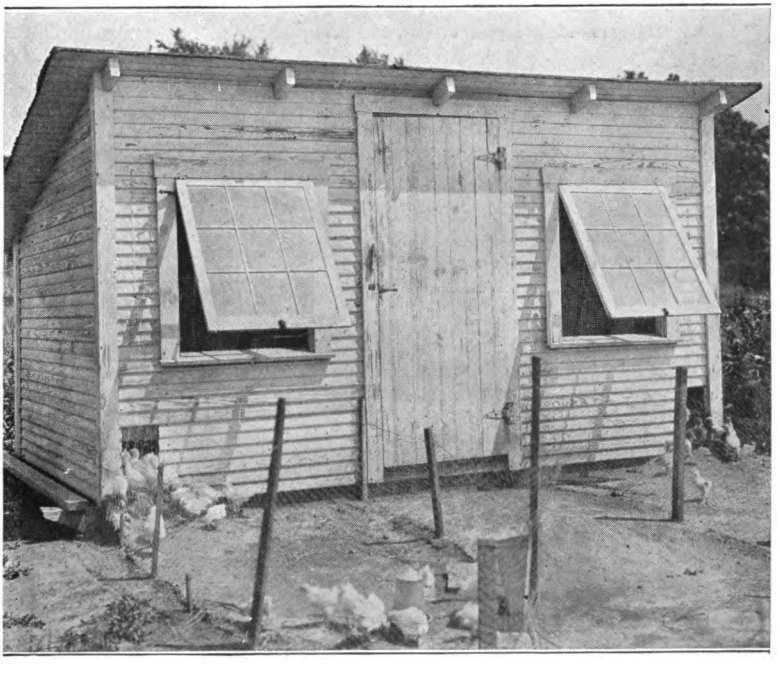


Fig. 14.—Every farm should have a portable poultry house.

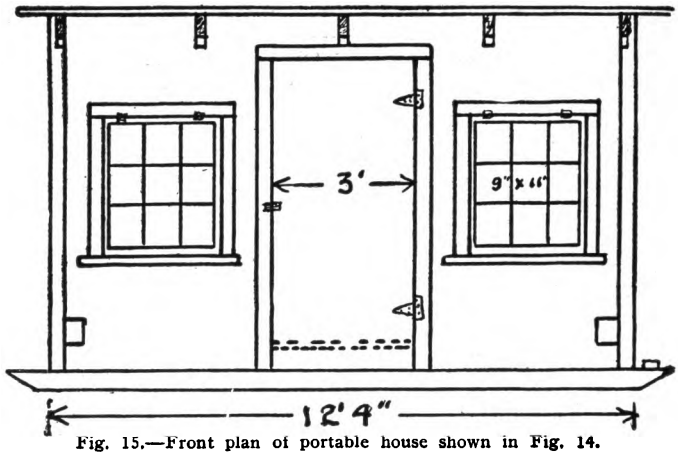


Fig. 15.—Front plan of portable house shown in Fig. 14.

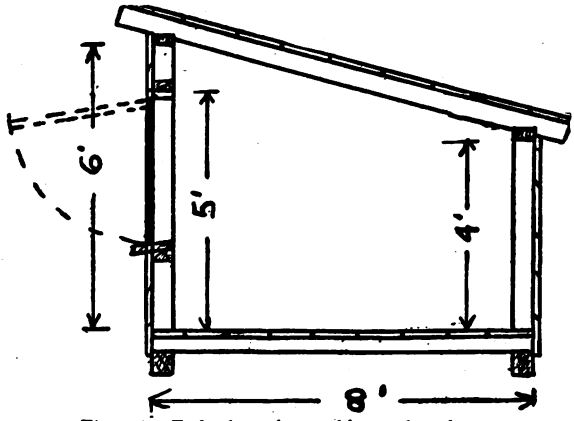


Fig. 16.—End plan of portable poultry house.

Combination hatching and brooding house. The combined hatching, brooding, and housing coop shown below is large enough to accommodate four hens and is as good as a 60-egg incubator. Farmers who have used this coop have pronounced it a success. This coop does away with the little "A" shaped coops which are commonly given to hens after they have hatched their broods and which are soon outgrown by what chicks remain after the spring rains and rats have taken their toll.

This coop is 3 feet wide, 6 feet long, 2 feet high in the rear and 3 feet high in front. A door 8 inches wide runs the entire length of the back so as to permit easy access to the hen. In the front are four openings which are covered with slats. It is possible to close the openings by placing an 8-inch door along the entire front. This makes the coop rat-proof at night and by hinging it at the bottom the door provides a runway for the chicks to enter. Just beneath the eaves along the front is a door a foot wide. The opening made by this door is covered with wire screen. When open this door lights the coop and protects it from rain.

The coop can be used for hatching and brooding. It is divided by burlap frames into four compartments. The aim is to get four

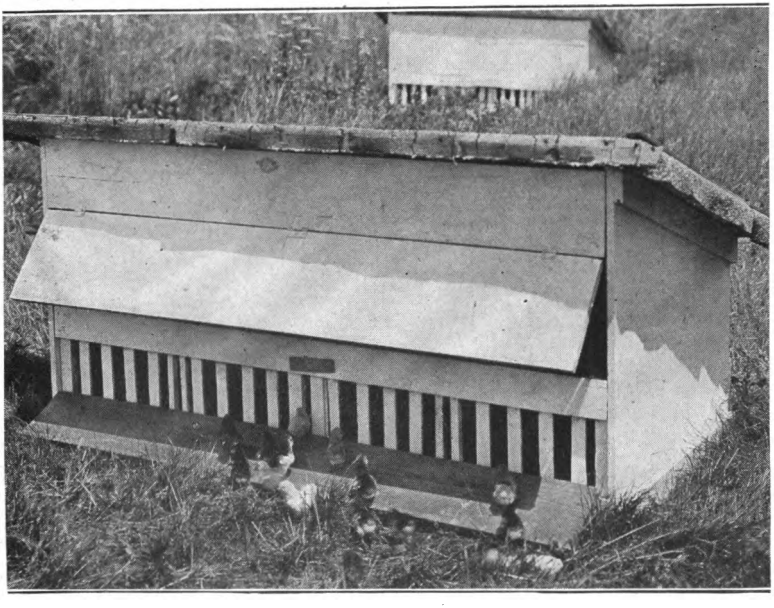


Fig. 17.—This is the famous combination hatching and brooding house.

hens in the back part of the coop and keep food and water in the runways in front. After hatching, the chicks from two hens are given to one for brooding. Later when the hen weans her chicks the remaining partition can be removed and the coop can be used to house the young stock for the remainder of the season. It makes hen hatching easier, and more efficient brooding possible. It can be made rat-proof very easily and can be moved from place to place with little trouble.

Hints on house construction. Four square feet of floor space should be allowed each hen. Have from eight to fourteen inches of roosting space to each hen. Allow one nest to every four or five hens.

Where muslin is used for ventilation purposes, one square foot of muslin should be placed on the south side for every fifteen square feet of floor space, if the house is 15 feet wide. If the house is 10 feet wide, on the south side use one square foot of muslin to every 20 square feet of floor space and if the house is 20 feet wide, on the south side use one square foot of muslin to every 10 square feet of floor space.

The foregoing rules will also apply in the use of the shutter front method of ventilation.

The height of the tops of the windows, if placed on the south side, should be a little less than one-half as high as the house is wide.

Fig. 18.—Rear view of combination hatching and brooding house.

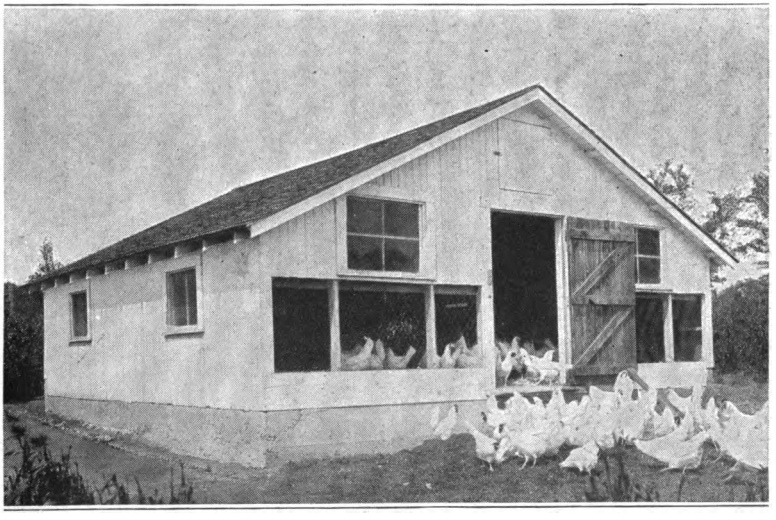
Glass should be placed in the house at the rate of one square foot to every 15 square feet of floor space.

If the chickens are yarded, 150 square feet of yard space should be allowed for each bird.

The square house is the most economical to construct.

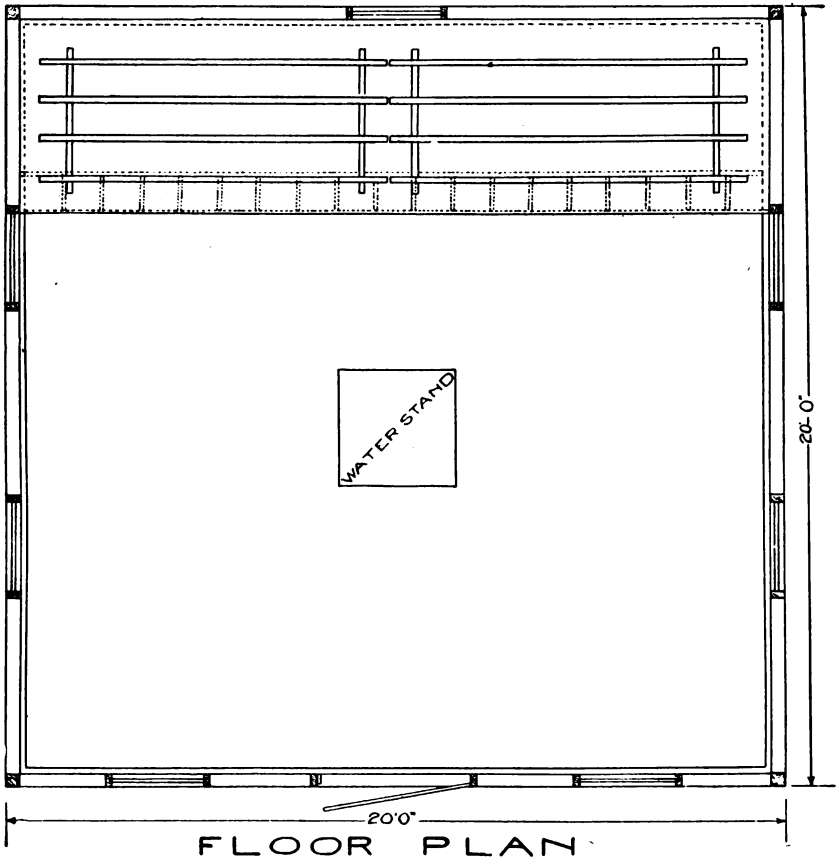
The Missouri poultry house. The Missouri poultry house was designed by the Poultry Department of the University of Missouri, College of Agriculture to meet the demand for a house of such size as to accommodate the average Missouri farm flock and also be adapted to Missouri conditions.

Since the average farm flock in Missouri is from 100 to 150 hens, this house is 20 feet square, the square house being the most economical to construct and affording a maximum amount of floor space. The ridge of the roof runs north and south, the roof being of equal spans and 11 feet high at the peak. The walls are 5 feet high at the eaves. The south side contains a door in the center and 6-light windows of 8x10-inch panes on either side of the door. These windows are placed high enough to afford a 30-inch opening beneath, one foot above the floor and extending the entire length each side of the door. This opening is covered with wire screen to keep the hens in and the sparrows out.



A simple, practical, farm poultry house.

Light. On the east and west sides are two windows, each of 6-light, 8x10-inch glass. On the north end next to the floor is a 6-light, 8x10-inch glass window. An arrangement which admits light from all directions has decided advantages because the light is so distributed that there are no dark corners, thus discouraging the laying of eggs on the floor. Also, when light comes from one direction the hen always faces in that direction when she scratches. In consequence, there is a gradual movement of the litter toward the back side of the house. When light comes from all directions and is evenly distributed this trouble is eliminated. One hen scratches in



FLOOR PLAN

Roomy but economical. The roosts should be on the north side away from drafts.

one direction and another in another and the litter never piles up on the dark side of the house because there is no dark side in such a house. The litter remains evenly distributed.

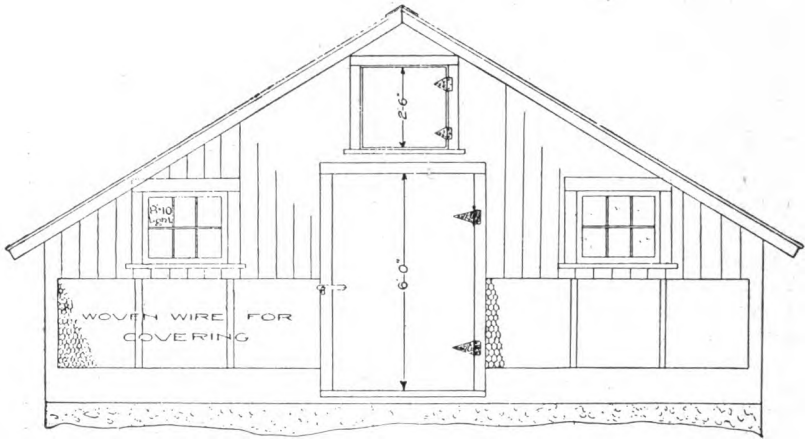
Ventilation. Another decided advantage in having openings on all sides is the excellent summer ventilation which can be afforded by removing the windows. This is an important point and should not be overlooked in constructing a poultry house under Missouri conditions. Summer ventilation is as important as winter ventilation. Winter ventilation is provided by the wire opening along the front of the house. The objectionable features of the open front can be eliminated by having a curtain which can be dropped in case of storms or whenever deemed advisable. During winter the success of ventilation of this type depends upon having the east, west, north and roof entirely air-tight so that cross drafts will be avoided. The wind drives into the house only a short distance and never back to the roosts which are located on the north side. There is a gradual movement of the air outward, thus insuring an abundance of ventilation without drafts. The open-front ventilation has an advantage over all other types of ventilation in that it requires practically no adjusting, never plugs up, is economical and always works. The house adapts itself to temperature changes without constant attention and in this way reduces to a minimum the labor of caring for the house. The popularity of this house among farmers indicates that it meets the requirements of a simple farm poultry house more nearly than any house which has been previously designed.

Walls and roof. The walls in the original house are of car siding, running up and down, which forms a tight and attractive wall. Missouri poultry houses have been constructed of concrete, hollow tile, and stucco, all of which have given satisfaction.

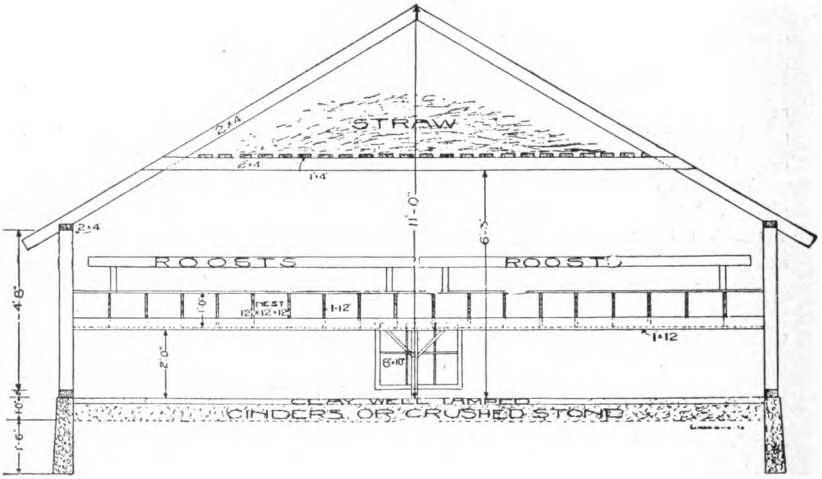
The roof is made of shiplap covered with shingles. The roof should be practically air tight. Steel roofing, if used, should be insulated by a layer of boards and roofing paper, otherwise it will not give satisfaction.

Floor. The floor is made of earth, which is both economical and durable. Earthern floors are efficient if properly constructed. In constructing an earthern floor there should be a wall six to eight inches high. A fill of five inches of coarse material, such as cinders, should be made to prevent the rise of moisture which is responsible for damp floors. This fill should also be made if a concrete floor is to be built. On top of the tamped cinders should be placed two or three inches of wet clay, packed firmly and permitted to dry thoroughly so it will harden. A foot or more of straw should be kept on the floor at all times. Such a floor will be dry and satisfactory.

The greatest objections to earth floors are (1) the possible invasion or rats, and (2) the fact that the straw will become dirty quicker than with a concrete floor and cause an injurious rising of dust.



Front View



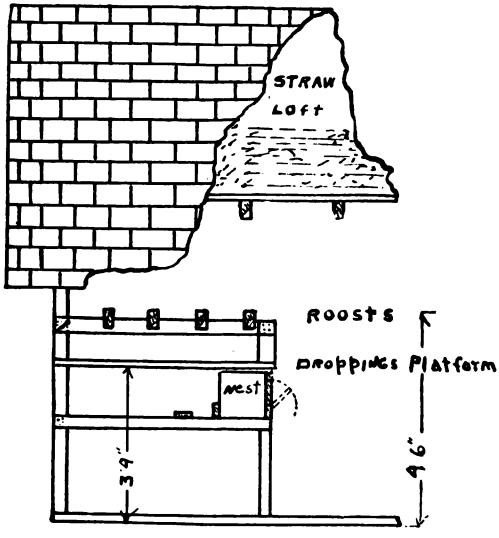
Sectional View.

Ventilation and insulation. The open front insures fresh air at all times; the straw loft helps keep the house dry in winter and cool in summer.

However, because of the low cost of construction, the earthen floor can be safely recommended and will prove very efficient.

Roosts. The roosts should be level at the back of the house; four feet high, fourteen inches from the wall, twelve inches apart, and made of 2x4's with the upper corners rounded. Poles two inches in diameter, if firmly placed, will serve the purpose nearly as well. Eight inches beneath the roosts should be placed a droppings platform to keep the floor clean and increase the floor space available for other purposes. The nests are placed underneath the front edge of the droppings platform. There should be six to eight inches of roosting space for each bird and one nest for every six or seven hens.

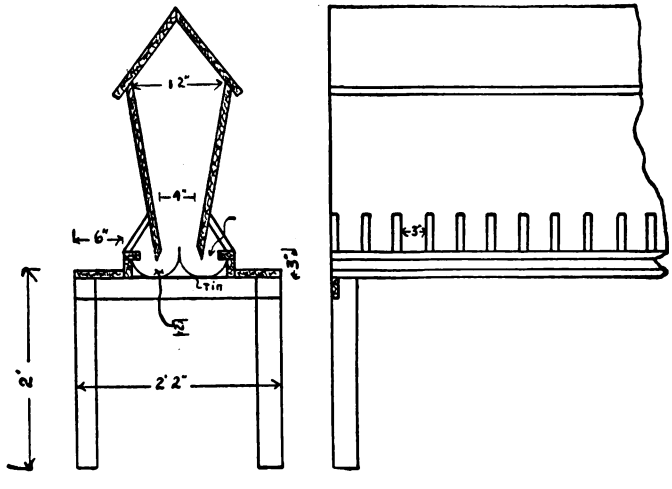
Loft. Joists or collar beams are placed just high enough to afford head room. In order to prevent the birds from roosting on these, they are covered with boards placed two inches apart. This forms a loft which is to be filled with straw. The straw acts as a sponge by absorbing the dampness, thus keeping the house drier and preventing the accumulation of frost on the roof in extremely cold weather. The straw also absorbs the heat and keeps the house cooler in summer. On the University poultry farm it is not at all unusual to find the Missouri Poultry House 10 degrees cooler in summer than other types of poultry houses.



Arrangement of roosts, nests, and droppings platform in the Missouri poultry house.

Feed boxes. Labor can be saved and the hens will overrun the other farm buildings less if feed boxes are installed in the house. By hanging them on the wall they will occupy no floor space and if provided with sloping tops the hens will not roost on them. A feed hopper for the purpose of feeding the ground feed mixture is also a valuable addition to the poultry house equipment. A water stand two feet high on which the water pail may be placed also keeps the water clean.

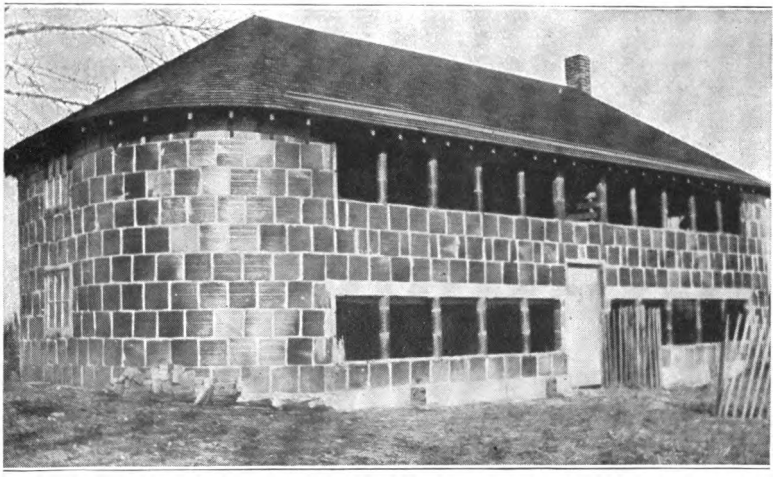
Feed hopper. In the Missouri poultry house is placed a feed hopper for the feeding of dry mash. The hopper is built on legs two feet in length so as not to occupy floor space. The hopper is a foot wide at the top and four inches at the bottom. The bottom is made of tin bent in such a manner that it forms a partition four inches high in the center; the tin being bent in the form of a half cylinder on each side affords a smooth curved bottom which insures feed working down without clogging. There is a space of two inches between the sides of the hopper and the bottom. The sides of the feeding trough are three inches high, the top having an over-hang of one inch which prevents the wasting of the feed. There is a space of two inches between the edge of this projection and the sides of the hopper. One inch strips are placed three inches apart from the sides of the hopper to the edge of the trough which also prevents wasting. The hopper can be made any length and in the Missouri poultry house extensions at each end provide a stand for the water pails.



BILL OF MATERIAL FOR HOUSE 20x20 FEET.

Use.	Pieces.	Size.	Grade.	Board feet.
Rafters	22	2x4x12	1	176
Plates and sills	8	2x4x20	1	107
Framing	19	2x4x16	1	203
Framing	1	2x4x10	1	7
Roosts	5	2x4x20	1	74
Finishing	10	1x4x10	2	34
Finishing	1	1x4x16	2	6
Finishing	8	1x4x12	2	32
Floor for loft	52	1x4x14	2	260
Sides, car siding	..	1x6x10	..	600
Roof and droppings	..	.....	..	...
Platform, shiplap	..	1x8x12	..	720
Windows	7	8x10 in.	..	...
Shingles	..	5½ M	..	...
Wire netting	..	3x32	..	...
Hinges	1 pair	.....	..	...
Foundation	..	.....	..	...

Coops for broody hens. Every poultry house should be provided with a slat-bottomed coop for broody hens. This should be built in three sections. As soon as a hen shows signs of broodiness she should be placed in the coop and be well fed. After three days she can be returned to the flock. By having three coops one coop can be emptied and refilled each day. Usually three days is sufficient to break up a broody hen, provided she is placed in the coop as soon as she shows inclination of broodiness. The longer hens are permitted to sit the more difficut it is to break them up. Broodiness is a cause of considerable loss and provision should be made to combat



A two-story Missouri poultry house built of hollow tile. It is situated on a hillside so that the upstairs flock has access to runs on the north.

conveniently this expensive habit. If broken up the hens will soon return to laying.

Other sizes. While the Missouri poultry house was originally designed 20 feet square, other sizes have been used with equal success. A house 25 feet square for 200 to 250 hens has given excellent satisfaction. Some have been built 30 feet square, housing 300 to 400 hens. One farmer has a two-story Missouri poultry house. By building on a side hill he has runs out from both floors thus making one roof serve for a double size house. There is no reason why larger houses should not be built if larger flocks are to be cared for.

For a house 25 feet square one should use six-light windows, 10x12-inch glass, and add an extra window on the north.

For a house 30 feet square one should use four six-light windows, 8x10-inch glass, on each side of the house.

For a house 30x40 one should use four six-light windows, 8x10-inch glass, on the front and back, and six windows on each side. The open front should be three feet wide.

The Missouri poultry house suggests the possibilities of remodeling other farm buildings into satisfactory quarters for poultry. The house is also suitable for other purposes than that of housing poultry in case the farmer should find occasion to change his system of farming. The house has given universal satisfaction and while designed for Missouri conditions it is adapted to localities where the winters are more sevcre or the summers are warmer. It is not at all unusual to find hens preferring the house to the shade of trees in summer. Scores of these houses have been built since the original house was constructed in 1915. The popularity of the house testifies to its practicability for farmers and poultrymen.

The Missouri poultry house. 1. Is cheaper to construct than the average house. 2. Has a ventilation system which always works. 3. Can be built to accommodate the entire farm flock. 4. Is constructed of cheap material but is durable. 5. Has an excellent circulation of air and is comfortable in summer. 6. Has light from all sides. 7. Is easily constructed because uniform in type with other buildings found on the farm.

Iowa Movable Colony Poultry House

Designed by Iowa State College of Agriculture and Mechanical Arts.
By H. A. Bittenbender and J. B. Davidson.

The Iowa colony house is also a movable house, but of the shed roof type. It has been tried out at the Iowa experiment station and in practice with good success. It is considerably larger than the A-shaped, previously described, and will accommodate a correspondingly larger flock. This house is about as large as can be built on skids for moving from place to place. Larger houses are damaged in moving. The completed building as shown in Fig. 1 has been designed and used by the poultry section of the Iowa Agricultural Experiment Station with excellent results for a number of years. Plans for the house with a shed roof are shown in Fig. 1-8 inclu-

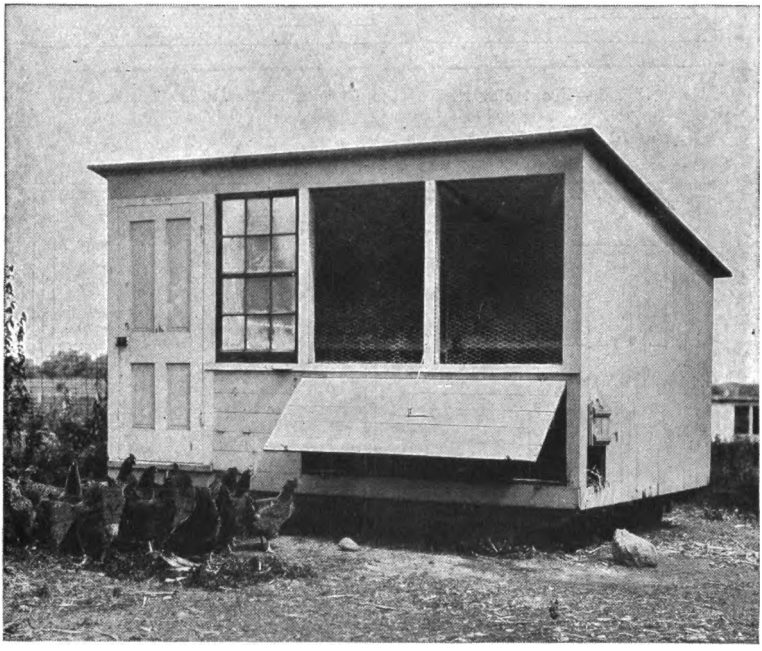


Fig. 1.—Iowa movable colony poultry house in use as a breeding house at the Iowa Agricultural Experiment station.

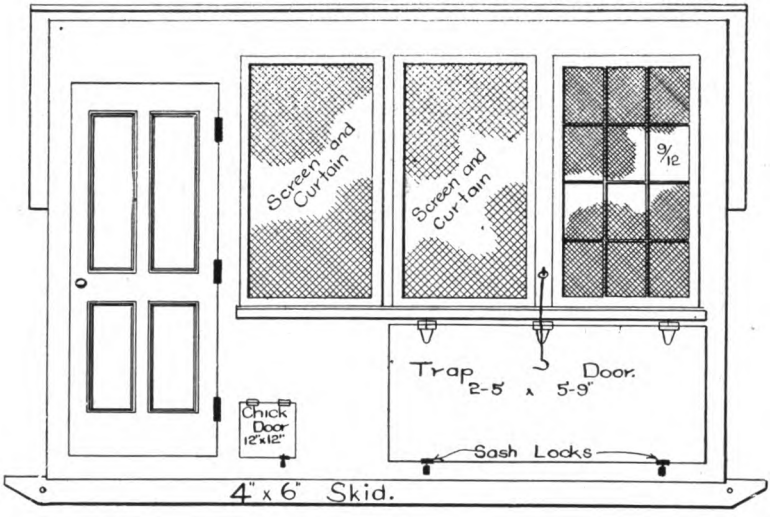


Fig. 2.—Front elevation of the Iowa movable colony house.

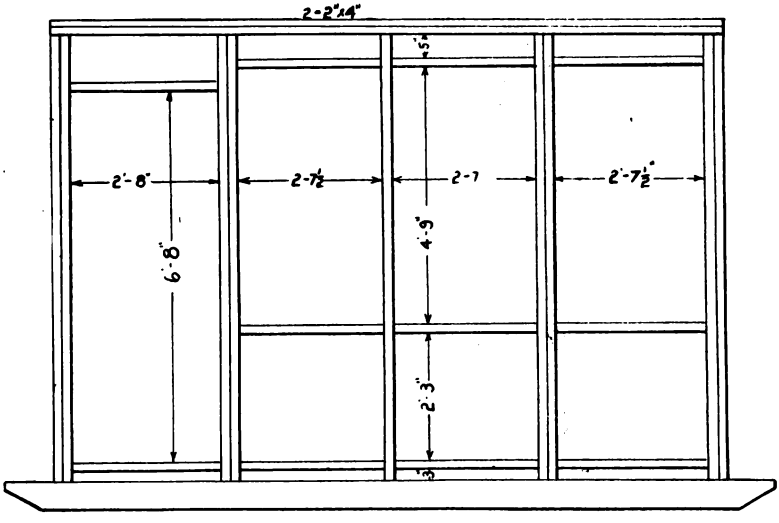


Fig. 3.—Details for frame and front side of the Iowa movable colony house.

sive. Fig. 7 shows how the shed roof may be changed to a combination roof to enable the house to be moved more easily through orchards where the limbs of the trees might interfere.

The significant feature of this house is the large area of the openings located in the front or south side of the house. One 12-light window with 9-12-inch lights is used together with two screened openings covered with curtains on frames. Then again, a trap door along the lower side is so arranged as to be opened to admit air and sunlight. The roosts and boards may be placed at the back and at the sides. In order to secure the full capacity of the house it is best to use the space along the back wall for the roosts and the space at the sides for nests.

The Iowa colony house will accommodate to good advantage a flock of 40 to 50 fowls.

Construction. In many respects the construction of the Iowa colony house resembles the A-shaped house previously described. Skids of fir or some other decay-resisting lumber are used for the

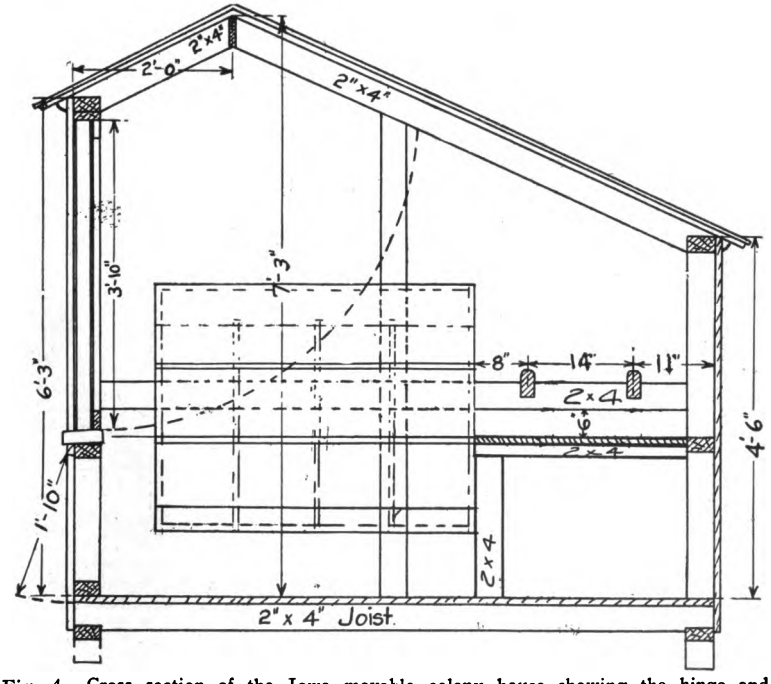


Fig. 4.—Cross section of the Iowa movable colony house showing the hinge and curtain frames and roosts.

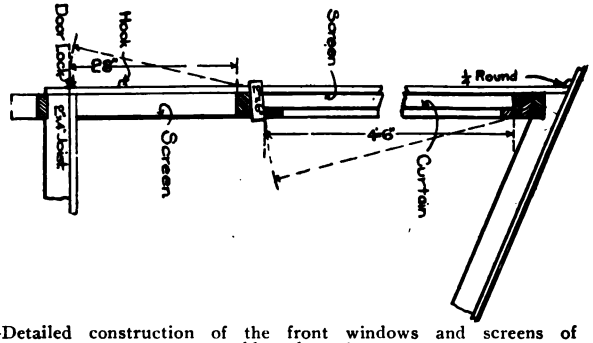


Fig. 5.—Detailed construction of the front windows and screens of the Iowa movable colony house.

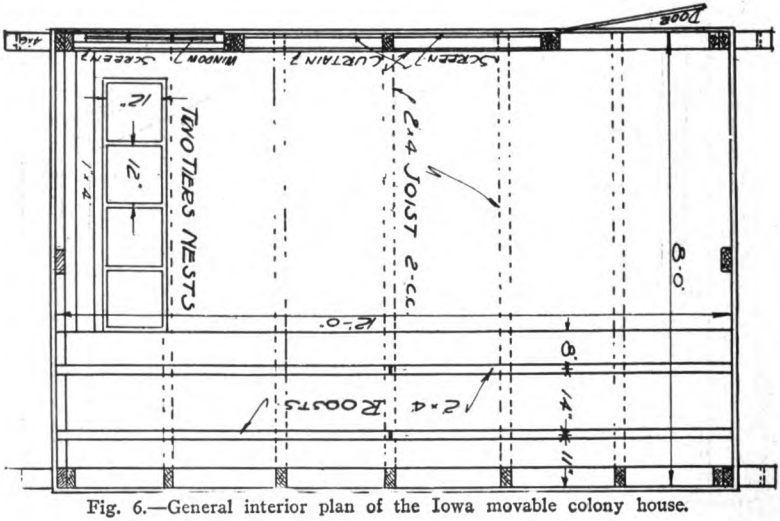


Fig. 6.—General interior plan of the Iowa movable colony house.

foundation. The joists are 2x4-inch pieces over which a floor of 1x6-inch flooring is laid. The plan calls for a frame of 2x4-inch material, altho the cost may be reduced by using lighter material. The siding is 1x6-inch flooring nailed to the frame vertically. Many prefer siding made of flooring in this manner to drop siding or clap-boards.

The roof should be sheathed with matched lumber before applying the prepared roofing. It is desirable that the lumber used be dressed on both sides in order that the inside as well as the outside will be smooth.

Skids:	2 pieces 4″x6″x14′ fir dimension.
Sills:	7 pieces 2″x4″x8′ No. 2 yellow or white pine.
Studs:	9 pieces 2″x4″x8′ No. 2 yellow or white pine.
	2 pieces 2″x4″x7′ No. 2 yellow or white pine.
	7 or 9 pieces 2″x4″x6′ No. 2 yellow or white pine.
Girts and Plates:	5 pieces 2″x4″x12′ No. 2 yellow or white pine.
	2 pieces 2″x4″x8′ No. 2 yellow or white pine.
Rafters:	7 pieces 2″x4″x9′ No. 2 yellow or white pine.
Floor:	17 pieces 1″x6″x12′ No. 2 white pine flooring.
Siding:	18 pieces 1″x6″x10′ No. 2 white pine flooring.
	17 pieces 1″x6″x14′ No. 2 white pine flooring.

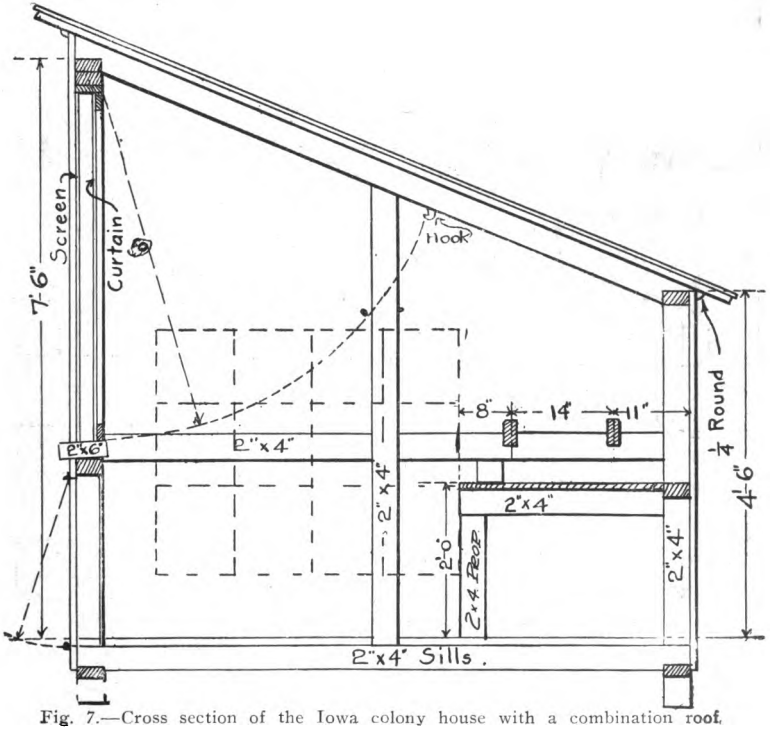


Fig. 7.—Cross section of the Iowa colony house with a combination roof.

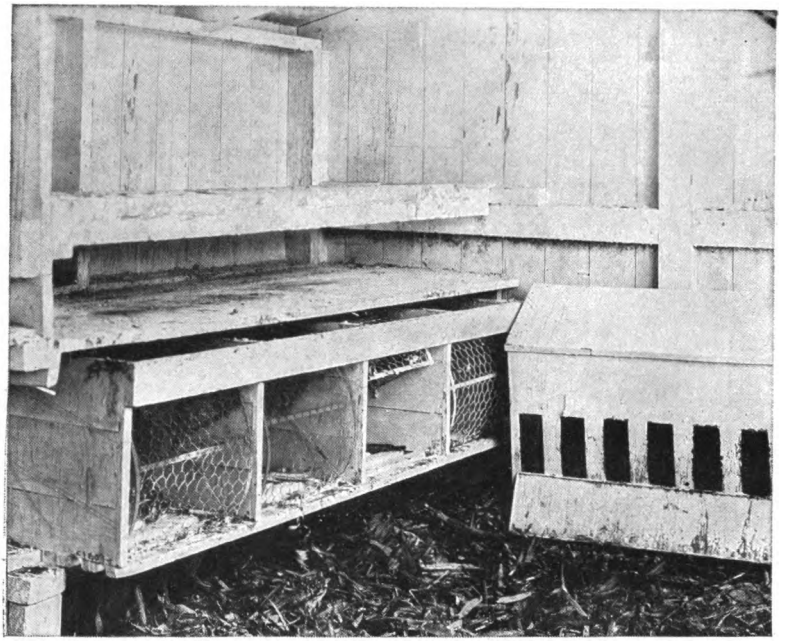
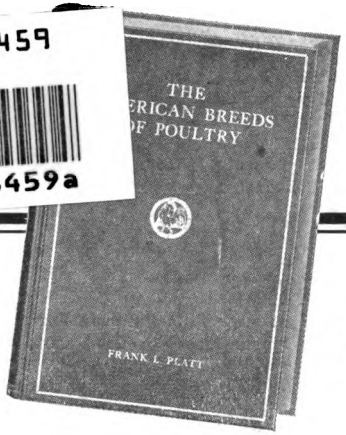


Fig. 8.—Interior view of Iowa movable colony house showing how trap nests may be placed under the dropping board. Note the end of a self feeding hopper. The nests may be located as shown in this illustration and at the end of the house as shown in the drawing.

Sheathing: 21 pieces 1″x6″x12′ No. 2 white pine flooring.
Roofing: 1¼ rolls best 3-ply roofing.
Door: 1, 4-panel 2′8″x6′8″x1⅛″ No. 3 Standard door.
Window: 1, 12-light 9″x12¼″ window.
Finish for curtain frames: 1 piece of 1¼″x6″x12′ C finish white pine.
Roosts and nests: 4 pieces 2″x4″x6′.
4 pieces 2″x4″x3′.
5 pieces 1″x4″x12′.
9 pieces 1″x12″x6′.
4 pieces ½″x12″x6′.
Miscellaneous: 2 pieces of ¼ rd. 12′.
2 pieces ¼″ rd. 10′.
Hardware: 1½ prs. 3″ wrought steel butts for main door.
4½ prs. 4″ Tee hinges for chick door, curtain frames and nests.
1½ prs. 6″ Tee hinges for trap door.
3 sash locks.
1 rim lock.
½ doz. screw hooks and eyes.
1 special long hook for trap door.
25 lbs. 8d nails.
8 lbs. 10d nails.
20 lbs. 20d nails.
20 feet of wire cloth or poultry netting 36 inches wide.

ESTIMATE OF COST.

2 pieces 4″x6″x14′ dimension.	
48 feet @ $31.00 per M	$ 1.48
17 pieces 2″x4″x12′ No. 1 white or yellow pine.	
3 pieces 2″x4″x14′.	
9 pieces 2″x4″x16′.	
5 pieces 2″x4″x18′.	
320 feet @ $26.00 per M	7.32
18 pieces 1″x6″x10′ No. 2 flooring.	
38 pieces 1″x6″x12′.	
17 pieces 1″x6″x14′.	
437 feet @ $38.00 per M	16.61
1 piece 1¼″x6″x12′ C finish white pine.	
7½ feet @ $65.00 per M	.49
2 pieces of ¼ rd. 12′.	
2 pieces of ¼ rd. 10′.	
44 feet @ 1c per foot	.44
4 pieces 1″x4″x12′ No. 2 white or yellow pine S2S.	
6 pieces 1″x12″x12′.	
88 feet @ $40.00 per M	3.52
1 piece ½″x12″x12′ No. 2 white or yellow pine.	
12 sq. feet @ $40.00 per M	.48
1 4-panel 2′8″x6′8″x1⅛″ No. 3 Standard door	2.20
1 12-light 9″x12″ window	2.75
1½ rolls 3-ply roofing @ $2.50	3.75
Painting	4.00
Hardware	5.84
Labor	15.00
Total estimated cost	$63.88



Written by Frank L. Platt, Editor of American Poultry Journal

The American Breeds of Poultry

All you want to know about Barred Plymouth Rocks, White Plymouth Rocks, Buff Plymouth Rocks, Partridge Plymouth Rocks, Silver Penciled Plymouth Rocks, Columbian Plymouth Rocks, Blue Plymouth Rocks, Black Javas, Mottled Javas, Black Giants, Buckeyes, Missouri Fluffs, Silver Wyandottes, Golden Wyandottes, White Wyandottes, Buff Wyandottes, Black Wyandottes, Partridge Wyandottes, Silver Penciled Wyandottes, Columbian Wyandottes, S. C. Rhode Island Reds, R. C. Rhode Island Reds, Rhode Island Whites, Dominiques. Full details on breeding for meat and eggs as well as all Standard Points.

Only a few of the general subjects are:

Special breeding for meat type; What buyers of market poultry prefer; Inheritance of egg production; Effect of heavy laying on breeding power; Qualifications of a breeder; Work of the breeder; Building a strain; Inbreeding; Linebreeding; Variation; Prepotency; Judging the shape of a bird; Body Shape of good layers; How to cull the flock; Value of the plumage; Color and structure of plumage; Breeding color and markings; Double mating; Growth of plumage; Molting.

This new book, published 1921. Up-to-date in all particulars, 256 pages. 100 illustrations.

PRICE, POSTPAID, $2.00

AMERICAN POULTRY JOURNAL
523 PLYMOUTH COURT CHICACO, ILL.